SPACE SYSTEMS

GE NO. 70SD5386

IMBLMS
PHASE B4

FINAL PROJECT DEFINITION STUDY

APPENDIX NO. 26

SET OF IMBLMS DRAWINGS

OFFICE OF PRIME RESPONSIBILITY

(NASA-CR-115605) IMBLMS PHASE B4. APPENDIX 26: SET OF IMBLMS DRAWINGS Final Project Definition Study (General Electric Co.) Nov. 1970 682 p
GP-0 CSCL 14B
F3/11 29004 Unclas
X72-10417

MAY 1977
RECEIVED
NASA STI FACILITY
INPUT BRANCH

(NASA-CR-151281) IMBLMS PHASE B4. APPENDIX 26: SET OF IMBLMS DRAWINGS Final Project Definition Study (General Electric Co.) 668 p
N77-77553
Unclas
00/12 26684
8-10741
Phase B4

AVAILABLE TO U.S. GOVERNMENT AGENCIES & U.S. GOVERNMENT CONTRACTORS ONLY

IMBLMS

GENERAL ELECTRIC

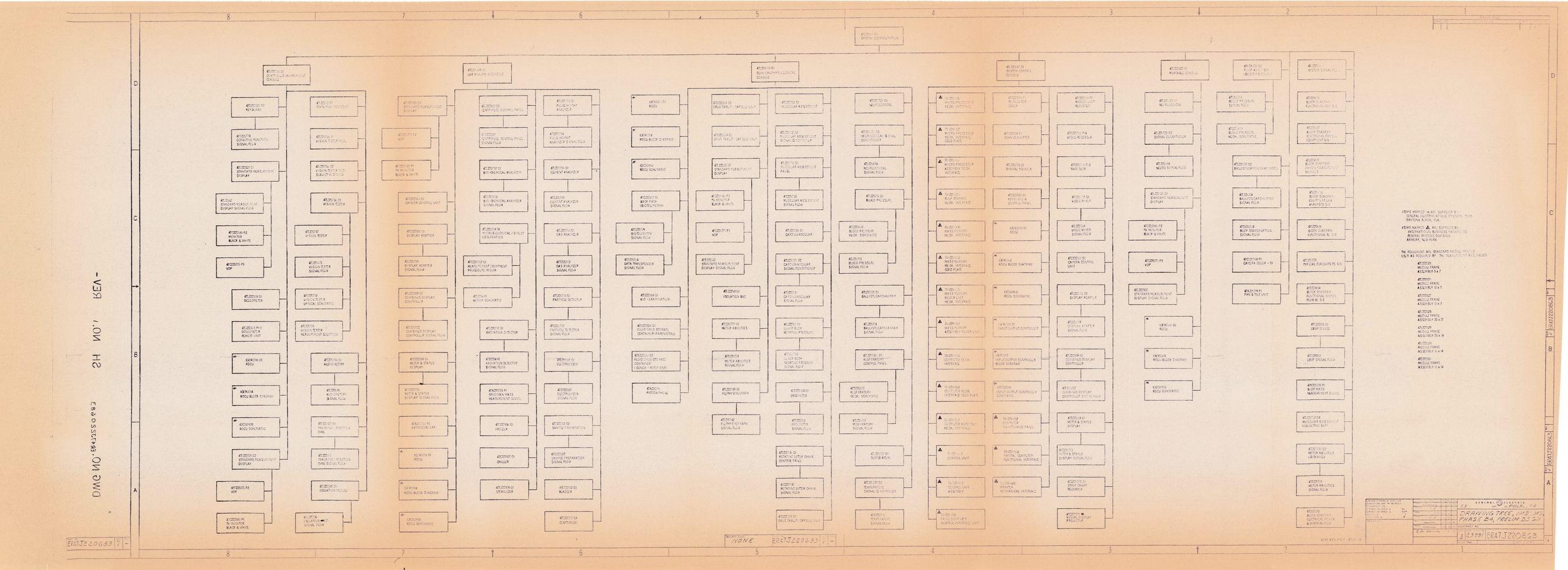

4T2201100 GI
SYSTEM CONFIGURATION
4T2201101 GI
CENTRIFUGE INSTRUMENT CONSOLE
4T2201102 GI
LAB ANALYSIS CONSOLE
4T2201103 GI
CLINICAL PHYSIOLOGICAL CONSOLE
4T2201104 GI
SYSTEM CONTROL CONSOLE
4T2201105 GI
PORTABLE CONTROL
4T2201106 GI
PORTABLE KEY BOX
4T2201200 GI
SYSTEM SIGNAL FLOW
4T2201201 GI
STANDARD MEASUREMENT DISPLAY
4T2201202 GI
STANDARD VISUAL DISPLAY
4T2201203 GI
STANDARD MEASUREMENT DISPLAY SIGNAL FLOW
4T2201204 GI
STANDARD VISUAL DISPLAY SIGNAL FLOW
4T2201205 GI
STANDARD MEASUREMENT DISPLAY SIGNAL FLOW
4T2201206 GI
COMBINED DISPLAY CONTROLLER
4T2201207 GI
COMBINED DISPLAY CONTROLLER SIGNAL FLOW
4T2201208 GI
COMBINED DISPLAY CONTROLLER SIGNAL FLOW
4T2201209 GI
DISPLAY ADAPTER
4T2201210 GI
DISPLAY ADAPTER SIGNAL FLOW
4T2201211 GI
VISION TESTER OPTICAL SCHEMATIC
4T2201212 GI
VISION TESTER MEASUREMENT SELECTION
4T2201213 GI
AUDIOMETRY
4T2201214 GI
AUDIOMETRY SIGNAL FLOW
4T2201215 GI
TRACKING REACTION TIME
4T2201216 GI
TRACKING REACTION TIME SIGNAL FLOW
4T2201217 GI
EQUILIBRIUM TESTER
4T2201218 GI
EQUILIBRIUM TESTER SIGNAL FLOW
4T2201219 GI
OCCULOMETER
4T2201220 GI
OCCULOMETER SIGNAL FLOW
4T2201221 GI
VISION TESTER
4T2201222 GI
VISION TESTER SIGNAL FLOW
4T2201223 GI
VISION TESTER SUBJECT'S STOOL
4T2201224 GI
VISION TESTER MODEL
4T2201225 GI
COGNITIVE FUNCTION
4T2201226 GI
COGNITIVE FUNCTION SIGNAL FLOW
4T2201227 GI
KEYBOARD
4T2201228 GI
RDCU
4T2201229 GI
RDCU BLOCK DIAGRAM
4T2201230 GI
RDCU SCHEMATIC
4T2201231 GI
STANDARD MEASUREMENT DISPLAY
4T2201232 GI
STANDARD MEASUREMENT DISPLAY
4T2201233 P2
VDP
4T2201234 P1
TV MONITOR BLACK & WHITE
4T2201235 GI
CENTRIFUGE CONTROL PANEL
4T2201236 GI
CENTRIFUGE CONTROL PANEL SIGNAL FLOW
4T2201237 GI
BIOCHEMICAL ANALYZER
4T2201238 GI
BIOCHEMICAL ANALYZER SIGNAL FLOW
4T2201239 P2
MICROBIOLOGICAL / DIRECT OBSERVATION
4T2201240 GI
MEASUREMENT EQUIPMENT PEDESTAL MOUNT
4T2201241 GI
MOUNT SCHEMATIC
4T2201242 GI
RADIATION DETECTOR
4T2201243 GI
RADIATION DETECTOR SIGNAL FLOW
4T2201244 P1
SPECIMEN MASS MEASUREMENT DEVICE
4T2201245 GI
FREEZER
4T2201246 GI
CHILLER
4T2201247 GI
STERILIZER
4T2201248 GI
BLOOD PRESSURE ANALYZER
4T2201249 GI
PULSE HEIGHT ANALYZER SIGNAL FLOW
4T2201250 GI
ELEMENT ANALYZER
4T2201251 GI
ELEMENT ANALYZER SIGNAL FLOW
4T2201252 GI
GAS ANALYZER
4T2201253 GI
GAS ANALYZER SIGNAL FLOW
4T2201254 GI
PARTICLE DETECTOR
4T2201255 GI
PARTICLE DETECTOR SIGNAL FLOW
4T2201256 GI
ELECTROLYZER
4T2201257 GI
ELECTROLYZER SIGNAL FLOW
4T2201258 GI
SAMPLE PREPARATION
4T2201259 GI
SAMPLE PREPARATION SIGNAL FLOW
4T2201260 GI
BLADDER
4T2201261 GI
CENTRIFUGE
4T2201262 GI
NEUROLOGICAL
4T2201263 GI
NEUROLOGICAL SIGNAL FLOW
4T2201264 GI
NEUROLOGICAL SIGNAL CONDITIONER
4T2201265 GI
BLOOD PRESSURE
4T2201266 GI
BLOOD PRESSURE SIGNAL FLOW
4T2201267 GI
BALLISTOCARDIOGRAPH
4T2201268 GI
BALLISTOCARDIOGRAM SIGNAL FLOW
4T2201269 GI
RESPIRATORY CONTROL PANEL
4T2201270 GI
RESPIRATORY SIGNAL FLOW
4T2201271 GI
TEMPERATURE
4T2201272 GI
TEMPERATURE SIGNAL CONDITIONER
4T2201273 GI
TEMPERATURE SIGNAL FLOW
4T2201274 GI
VISUAL DISPLAY PROJECTOR
4T2201275 GI
TV MONITOR COLOR
4T2201276 GI
SCAN CONVERTER
4T2201277 GI
DIGITAL FRAME
4T2201278 GI
KEYBOARD & CONTROL PANEL
4T2201279 GI
RDCU
4T2201280 GI
RDCU BLOCK DIAGRAM
4T2201281 GI
RDCU SCHEMATIC
4T2201282 GI
INPUT/OUTPUT CONTROLLER
4T2201283 GI
INPUT/OUTPUT CONTROLLER BLOCK DIAGRAM
4T2201284 GI
INPUT/OUTPUT CONTROLLER SCHEMATIC
4T2201285 GI
DISPLAY & CONTROL PANEL
4T2201286 GI
DISPLAY & CONTROL PANEL SIGNAL FLOW
4T2201287 GI
DIGITAL COMPUTER FUNCTIONAL INTERFACE
4T2201288 GI
PRINTER MECHANICAL INTERFACE
4T2201289 P1A
VISCO RECORDER
4T2201290 P1B
TAPE DECK
4T2201291 GI
VIDEO MIXER
4T2201292 GI
VIDEO MIXER SIGNAL FLOW
4T2201293 GI
CAMERA CONTROL UNIT
4T2201294 GI
DISPLAY ADAPTER
4T2201295 GI
DISPLAY ADAPTER SIGNAL FLOW
4T2201296 GI
COMBINED DISPLAY CONTROLLER
4T2201297
COMBINED DISPLAY CONTROLLER SIGNAL FLOW
4T2201298 GI
MOTOR & STATUS DISPLAY
4T2201299
MOTOR & STATUS DISPLAY SIGNAL FLOW
4T2201300 GI
STRIP CHART RECORDER
4T2201301 GI
STRIP CHART RECORDER
4T2201302 GI
NEUROLOGICAL
4T2201303 GI
SIGNAL CONDITIONER
4T2201304 GI
NEURO SIGNAL FLOW
4T2201305 GI
STANDARD MEASUREMENT DISPLAY
4T2201306 P2
TV MONITOR BLACK & WHITE
4T2201307 P3
VDP
4T2201308 GI
RDCU
4T2201309 GI
RDCU BLOCK DIAGRAM
4T2201310 GI
RDCU SCHEMATIC
4T2201311 GI
BLOOD PRESSURE
4T2201312 GI
BLOOD PRESSURE SIGNAL FLOW
4T2201313 GI
BALLISTOCARDIOGRAPH SIGNAL FLOW
4T2201314 GI
BODY COORDINATION
4T2201315 GI
BODY COORDINATION SIGNAL FLOW
4T2201316 GI
CAMERA COLOR - TV
4T2201317 P1
PAN & TILT UNIT
4T2201318 GI
BLOCK DIAGRAM FUNCTIONAL SIGNAL FLOW
4T2201319 GI
BLOCK DIAGRAM FUNCTIONAL CAT. S.S.
4T2201320 GI
BLOCK DIAGRAM FUNCTIONAL PHYSIOLOGY EQUIPMENT S.S.
4T2201321 GI
BLOCK DIAGRAM FUNCTIONAL MODULES
4T2201322 GI
BLOCK DIAGRAM EQUIPMENT S.S. ANALYSIS S.S.
4T2201323 GI
BLOCK DIAGRAM FUNCTIONAL SS
4T2201324
TYPICAL CIRCUITS FL S.S.
4T2201325 GI
BLOCK DIAGRAM FUNCTIONAL SIGNAL FLOW RL S.S.
4T2201326 GI
LOOP DEVICE
4T2201327 GI
LOOP SIGNAL FLOW
4T2201328 P1
BODY MASS MEASUREMENT DEVICE
4T2201329 GI
BIOCHEMICAL ASSESSMENT INSTRUMENT BAR
4T2201330 GI
MOTOR ABILITIES LAB DEVICE
4T2201331 GI
MOTOR ABILITIES SIGNAL FLOW
4T2201332 GI
BLOCK DIAGRAM ELECTRICAL POWER & DISTRIBUTION
4T2201333 GI
BLOCK DIAGRAM ELECTRICAL POWER & DISTRIBUTION
4T2201334 GI
BLOCK DIAGRAM ELECTRICAL POWER & DISTRIBUTION
4T2201335 GI
BLOCK DIAGRAM ELECTRICAL POWER & DISTRIBUTION
4T2201336 GI
BLOCK DIAGRAM ELECTRICAL POWER & DISTRIBUTION

TABLE OF CONTENTS - APPENDIX NUMBER 26

1. GE - SSO Drawings

2. GE - ASO Drawings

3. IBM Drawings

4. Vendor Supplied Information

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

STANDARD MEASUREMENT DISPLAY MODULE

VISUAL MONITOR (B&W)

VISUAL DISPLAY PROJ

EXT VIDEO

MEASUREMENT ADAPTER

TIMING & SYNC GEN

COMBINED DISPLAY CONTROLLER

A/D CONVERTER

D.V.M. ELECTRONICS

V.D.P. CONTROL

2 LINES

2 LINES

MANUAL CONTROL

EVENT INPUTS

DISPLAY SELECTOR SWITCHES

ANALOG INPUTS

MEASUREMENT MODULE

MEASUREMENT MODULE

MEASUREMENT MODULE

MEASUREMENT MODULE

VISUAL MONITOR (B&W)

REAR PORT PROJ

VISUAL DISPLAY PROJ

INDEPENDENT

NORMAL

ANALOGS ETC

MEASUREMENT ADAPTER

VIDEO MIXER

VIDEO GENERATOR

SYNC

TIMING & SYNC GEN

PAGE MEMORY

MODE CONTROL

CONTINUOUS WAVE BAR CHART

EVENT MEMORY FUNCTIONS

I/O INTERFACE

KEYBOARD

COMBINED DISPLAY CONTROLLER MODULE

PARALLEL DATA & ADDRESS LINES

METER & STATUS DISPLAY

DISPLAY ADAPTER MODULE

DADS/S SERIAL LINES

TV CAMERA

MICROSCOPE ADAPTER

LAB ANALYSIS CONSOLE

OPTICAL COMBINER

VISUAL MONITOR (COLOR)

VISUAL DISPLAY PROJ

VIDEO MIXER

SYNC TO LOWER LEVEL TV COMPONENT

SYNC

SCAN CONVERTER

VIDEO RECORDER

VIDEO MIXER

TV CAMERA

PAN & TILT OPTIONAL

TV CAMERA (OPTIONAL LOCATIONS)

PAN & TILT OPTIONAL

OTHER TV CAMERAS

SPACECRAFT RF LINK

COMBINED DISPLAY CONTROLLER MODULE

VIDEO GENERATOR

TIMING & SYNC GEN

PAGE MEMORY

MODE CONTROL

CONTINUOUS WAVE BAR CHART

EVENT MEMORY FUNCTIONS

KEYBOARD

I/O INTERFACE

PARALLEL DATA & ADDRESS LINES

DISPLAY ADAPTER MODULE

METER & STATUS DISPLAY

DIGITAL PRINTER

STRIP CHART RECORDER

2 ANALOG LINES

TIME CODE

ANALOG LOOP RECORDER

8 ANALOG LINES

DADS/S SERIAL LINES

MAIN CAD S/S CONSOLE

VISUAL MONITOR (B&W)

REAR PORT PROJ

VISUAL DISPLAY PROJ

SLIDE CONTROL

KEYBOARD

TV CAMERA

CONTROLLED ENVIRONMENT CHAMBER

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN Ron Ramon	16	9	70
CHECKED	23	9	70
RELEASED PE&E	11	11	70
ENGR	4	11	70
	5	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA.

BLOCK DIAGRAM FUNCTIONAL CONTROL & DISPLAY S/S IMBLMS B4

SIZE	CODE IDENT NO.	ER 47E220675
E	23991	

SCALE 7K SHEET 1 OF 1

47E220675	47E220696G1
DWG NO.	NEXT ASSY

REV ER47E220675 E

REV ER47E220675 E

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

SUBJECT

EOG, EEG, EMG, ECG BIOPOT SIGNALS, GSR SIGNAL
GSR STIMULATION

NEUROLOGICAL MODULE
NEUROLOGICAL ELECTRODE ASSEMBLIES
GSR STIMULUS
NEUROLOGICAL ELECTRONICS UNIT
EOG, ENG, EEG, GSR, EMG, ECT, ECG, SLEEP STATE
REMOTE CONTROL SIGNALS
POWER

RLC MODULE
RLC & DRIVES
DATA
CONTROLS
RLC MEASUREMENT UNITS
RCL ACCEL, VEL, RESPONSES
REMOTE CONTROL SIGNALS
POWER

ECG, VCG, BIOPOT SIGNALS
PCG SIGNAL
STIMULATING FREQ
IMPEDANCE SIGNAL

CARDIOVASCULAR MODULE
CARDIO ELECTRODE ASSY
ACOUSTIC TRANSDUCER
IMPEDANCE ELECTRODE ASSY
CARDIOVASCULAR ELECTRONICS UNIT
POWER
ECG, ECT, VCG, PCG, PWC, PWV
REMOTE CONTROL SIGNALS
$z, \Delta z, \frac{dz}{dt}$

ERGOMETER

VENOUS PRESSURE
ECG BIOPOT

BLOOD PRESSURE MODULE
ARM CUFF
PUMP
CONTROLS
PRESSURE
PRESSURE TRANSDUCER
BLOOD PRESSURE ELECTRONICS UNIT
SYSTOLIC, DIASTOLIC, VENEOUS BLOOD PRESSURE
REMOTE CONTROL SIGNALS
POWER

DATA ACQUISITION & DISTRIBUTION SUBSYSTEM

BIO TRANSPONDER MODULE
ELECTRODE ASSEMBLIES
BIO-TLM CONDITIONER
DATA
COMMANDS, POWER

DATA TRANSPONDER UNIT
Z
LBNP

PLETHYSMOGRAPH MODULE
RESISTANCE TRANSDUCER ASSEMBLY
PLETHYSMOGRAPH ELECTRONICS UNIT
ΔV
REMOTE CONTROL SIGNALS
POWER
27.5VDC
EP & SD

BALLISTOCARDIOGRAM MODULE
BALLISTOCARDIOGRAM DEVICE
BALLISTOCARDIOGRAM ELECTRONICS UNIT
ACCELEROMETER DATA (3 LINEAR, 3 ANGULAR) AND VCG
REMOTE CONTROL SIGNALS
POWER

VCG BIOPOT

RESPIRATORATORY MODULE
RESPIRATORY GAS ASSEMBLY
MASS SPECTROMETER
PARTIAL PRESSURES
MOUTHPIECE ASSEMBLY
VOLUME MEASUREMENT EQUIPMENT
RESPIRATORY ELECTRONICS UNIT
LUNG VOLUMES, FLOWS, COMPLIANCE
REMOTE CONTROL SIGNALS
POWER

INSPIRE, EXPIRE

TEMPERATURE MODULE
CORE & BODY TEMP SENSOR ASSEMBLY
TEMPERATURE ELECTRONICS UNIT
CORE, BODY TEMP, AVG TEMP
REMOTE CONTROL SIGNALS
POWER

CORE, BODY SITE TEMP

MUSCULAR ASSESSMENT MODULE
MUSCLE SIZE & STRENGTH MEASURING DEVICES
MUSCULAR ELECTRONICS UNIT
MUSCLE SIZE, STRENGTH, EMG
REMOTE CONTROL SIGNALS, STIMULUS SIG
POWER

STIMULUS
EMG

VISION TESTER MODULE
RESPONSE KEY
MULTIPARAMETER VISION TESTER
VISION TEST PARAMETERS
REMOTE CONTROL SIGNALS
POWER

VISUAL
RESPONSE

AUDIOMETRY MODULE
STEREO HEADSET
PROGRAMMABLE FUNCTION GEN
RESPONSE KEYS
CONTROL UNIT
AUDIO TEST PARAMETERS
REMOTE CONTROL SIGNALS
POWER

AUDIO
RESPONSE

MOTOR ABILITIES MODULE
MOTOR ABILITIES EQUIPMENT
X, Y, Z, ΔX, ΔY, ΔZ
REMOTE CONTROL SIGNALS
POWER

HAND/ARM

OCULOMETER MODULE
FIXED OCULOMETER
REMOTE OCULOMETER
OCULOMETER ELECTRONICS
POWER
REMOTE CONTROL SIGNALS
EYE POS, PUPIL DIA, BLINK RATE, OCUL ACCOM

EYE MOVEMENT

POWER
CONTROL
DATA

LEGEND
- — — FUNCTIONAL INTERFACE
- [ ] EXPERIMENT SUPPORT EQUIPMENT NOT PART OF PHYSIOLOGICAL EQUIPMENT SUB-SYS

PRELIMINARY

47E220677	47E220696G1
DWG NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ±, 3-PLACE DECIMALS ±, ANGLES ±, FRACTIONS ±, MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	11	5	70
CHECKED	13	10	70
ISSUED RELEASED PE & I/C	17	11	70
ENGRG	24	10	70
MFG	27	10	70
PROJ	29	10	70
	29	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

BLOCK DIAG, FUNCTIONAL PHYSIOLOGICAL EQUIP S/S
IMBLMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220677 | REV
SCALE NONE | SHEET 1 OF 1

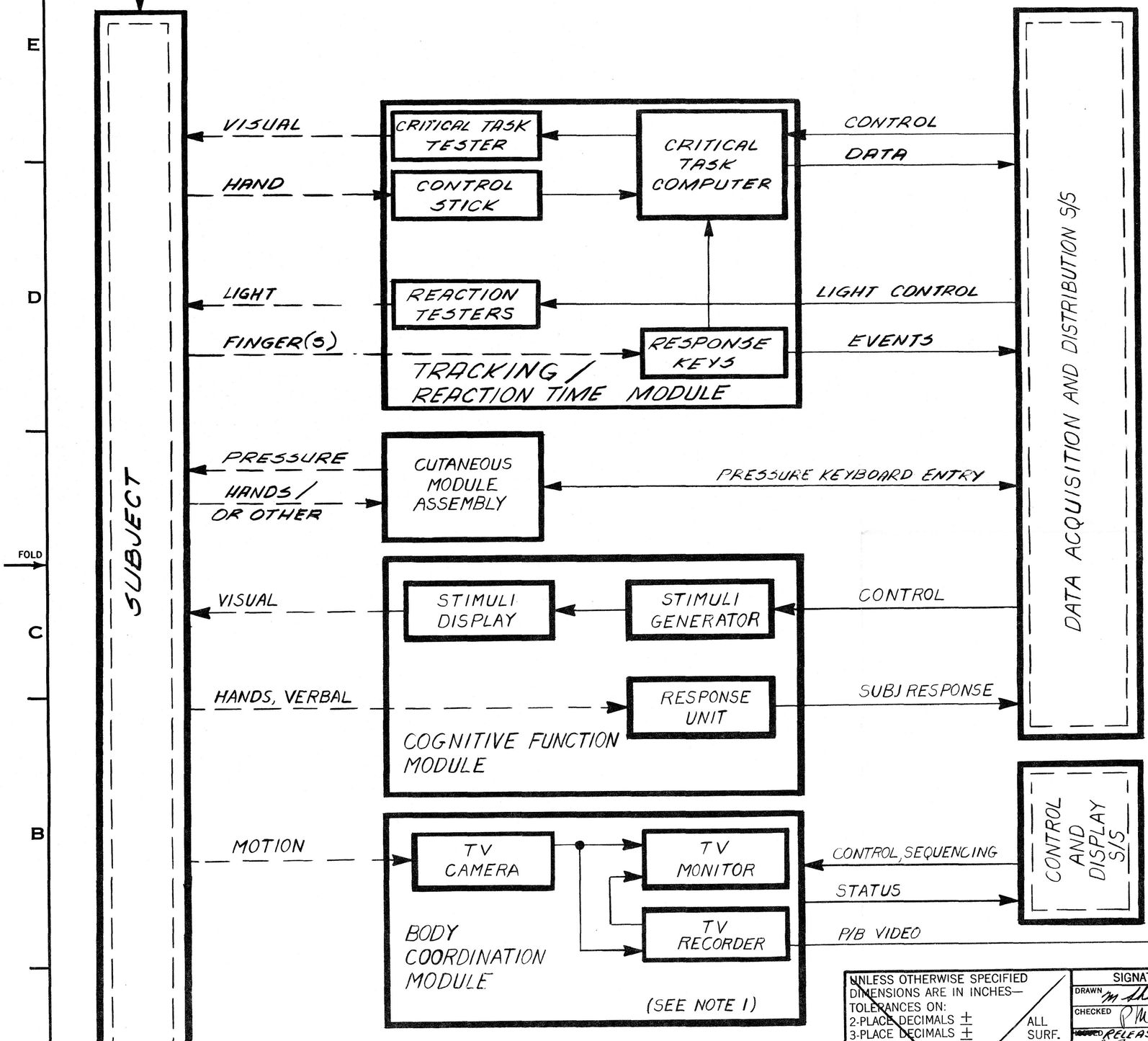
SIZE E ER47E220677 REV
SIZE F ER47E220677 REV

PRINTED IN U.S.A.

SIZE C | ER47C220681 | REV

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED



NOTES :

1- THIS EQUIPMENT WILL BE INCLUDED IN THE CONTROL AND DISPLAY SUB-SYSTEM.

2- [ ] INDICATES : NOT PART OF BEHAVIORAL EQUIPMENT SUB-SYSTEM.

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN M Shelf fr	18	5	70
CHECKED P Marchetta	18	5	70
ISSUED RELEASED PCFR	10	11	70
ENGRG P. Marchetta	29	10	70
[redacted]			
[redacted] R.F. Di Giuliano	29	10	70
[redacted]	29	11	70
[redacted] S.R. Hunt	29	10	70

GENERAL ELECTRIC
SPACE SYSTEMS — LOC PHILA PA

BLOCK DIAG · FUNCTIONAL
BEHAVIORAL SUB-SYSTEM
IMBLMS B4

SIZE	CODE IDENT NO.	
C	23991	ER47C220681

SCALE 0% | SHEET 1 OF 1

47C220681	47E220636G1
DWG NO.	NEXT ASSY

FN903-F (5-68)
PRINTED IN U.S.A.

SIZE C | ER47C220681 | REV

DIST TO

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

DATA

CONTROL

FILTER STATUS

25 W. INC. LAMP ON/OFF

ANOL. FILTER SELECTION

ANOL. FILTER SELECTION

ANOL. FILTER SELECTION

RED FILTER BRIGHTNESS

YELLOW FILTER BRIGHTNESS

GREEN FILTER BRIGHTNESS

IRIS DRIVE

FILM SELECTION

EYE DIRECTION DATA

SUBJECT RESPONSES

NEAR SELECTION

FAR SELECTION

LEFT EYE SELECTION

RIGHT EYE SELECTION

VISUAL ACUITY SELECTION

DEPTH PERC. RODS SEL

ANOMALOSCOPE SEL

STIMULI SELECTOR

LOCAL CONTROL PANEL

BRIGHTNESS 5° LIGHT BOX

FILTER STATUS

ON/OFF

RED ON/OFF

YELLOW ON/OFF

GREEN ON/OFF

FILTER SELECTION

25 WATT INCANDESCENT LIGHT SOURCE

5° LIGHT BOX (5-1000 mil)

DUAL STEPPER MOTOR DRIVE

DUAL IRIS DRIVE

PULSE GATE

PULSE GENERATOR

RED ADJUSTMENT

YELLOW ADJUSTMENT

GREEN ADJUSTMENT

BRIGHTNESS ADJUSTMENT

IRIS DRIVE

FILM SELECTION

EYE DIRECTION DATA

VERNIER TARGET CONTROL

SUBJECT RESPONSE SIGNALS

TARGET SELECTION

SUBJECT RESPONSE PANEL

RED LEVEL

YELLOW LEVEL

GREEN LEVEL

FILM POSITION

EYE DIRECTION DATA

FIXED OCULOMETER

RESPONSES

SUBJECT

STIMULI

ANOMALOSCOPE DISPLAY SCREEN

VISUAL ACUITY OR DEPTH PERCEPTION STIMULI

NEAR OR FAR DISTANCE SELECTOR

STIMULI SELECTOR A MIRROR

STIMULI

NEAR SELECTION

FAR SELECTION

LEFT EYE SELECTION

RIGHT EYE SELECTION

SEL VIS AC. OR DPTH PERC.

SEL ANOMALOSCOPE

SEL STIMULI SELECTOR B

EYE SELECTOR

STIMULI

POSITION

RED LEVEL

YELLOW LEVEL

GREEN LEVEL

EYE SELECTED INDICATION

NEAR/FAR POSITION INDICATION

FILM POSITION

POSITION

RATE

BRIGHTNESS LEVEL

CALIBRATED CO ORDINATES

POSITION

BRIGHTNESS LEVEL

BRIGHTNESS LEVEL

BRIGHTNESS LEVEL

LOCAL DATA DISPLAY AND SELECTOR

VISION TESTER MODULE

DATA

CONTROL

TO ADCU

BRIGHT. THRESH. SEL

PHORIAS SELECTION

DUCTION SELECTION

FIELD MAP SELECTION

FLICKER SELECTION

25 W CRT LAMP ON/OFF

10° FIELD ADJUSTMENT

2° FIELD ADJUSTMENT

30° FIELD ADJUSTMENT

RISLEY MIRROR CONTROL

2 WATT LAMP ON/OFF

2 WATT LAMP FLICKER RATE

2 W LAMP FLICKER/STEADY

LOCAL CONTROL PANEL

SEL BRIGHTNESS THRESHOLD

SEL PHORIAS/DUCTION

SEL VISUAL FIELD MAP

SEL FLICKER

STIMULI SELECTOR B MIRROR

STIMULI

VISUAL FIELD DISPLAY (10°)

LEVEL

FIXATION SPOT DISPLAY (2°)

STIMULI

PRE-ADAPTIVE DISPLAY (30°)

STIMULI

RISLEY PRISM (MIRROR) DUAL DRIVE

DUCTION DISPLAY

PHORIAS DISPLAY

VISUAL FIELD MOVABLE COLLIMATOR

DUAL CO-ORDINATE DRIVES

FIXATION SPOT DISPLAY

FLICKER DISPLAY

VARIABLE FREQUENCY OSCILLATOR

SELECTION

BRIGHTNESS ADJUSTMENT

LEVEL

BRIGHTNESS ADJUSTMENT

BRIGHTNESS ADJUSTMENT

BRIGHTNESS ADJUSTMENT

BRIGHTNESS CONTROL

CHOPPER WHEEL

SELECTION

SELECTION

CONTROL

SELECTION

FILTER SELECTION

ON/OFF

FLICKER RATE

STEADY/FLICKER

CONTROL

CONTROL

RATE CONTROL

OUTPUT SELECTION

ON/OFF

25 WATT CALIBRATED LIGHT SOURCE

2 WATT INCANDESCENT LIGHT SOURCE

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN [illegible]	28	7	70
CHECKED [illegible]	30	7	70
ENGR [illegible]	12	11	70
ENGRG [illegible]	3	8	70
[illegible]	9	10	70
[illegible]	12	10	70
[illegible]	19	10	70
[illegible]	14	10	70

GENERAL ELECTRIC

SPACE SYSTEMS LOC PHILA PA

DIAG - SIGNAL FLOW

VISION TESTER

PE 5/5 IMBLM3 B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220685

SCALE [illegible] SHEET 1 OF 1

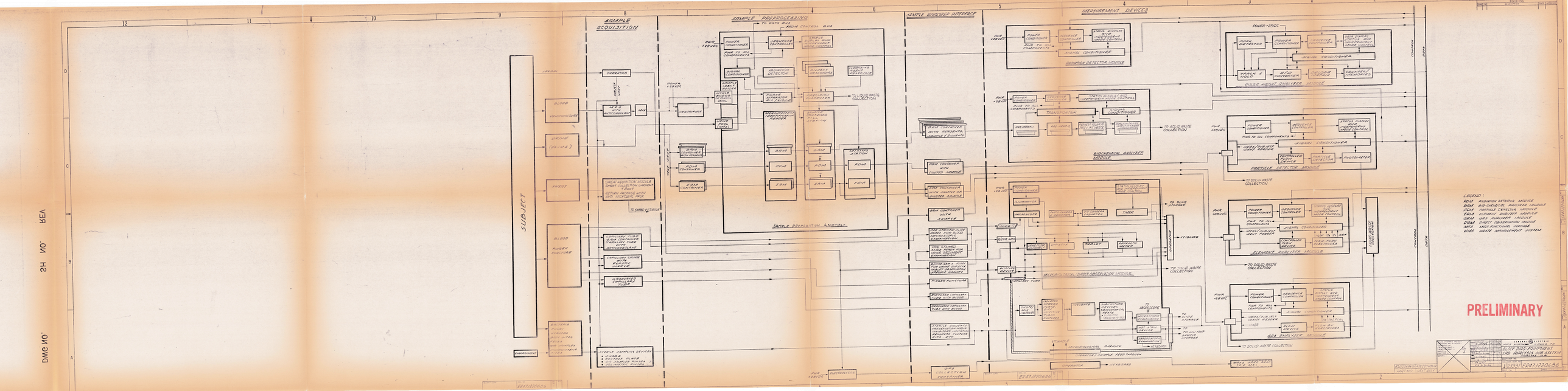
47E220685	47E220136 G1 G3
DWG NO.	NEXT ASSY

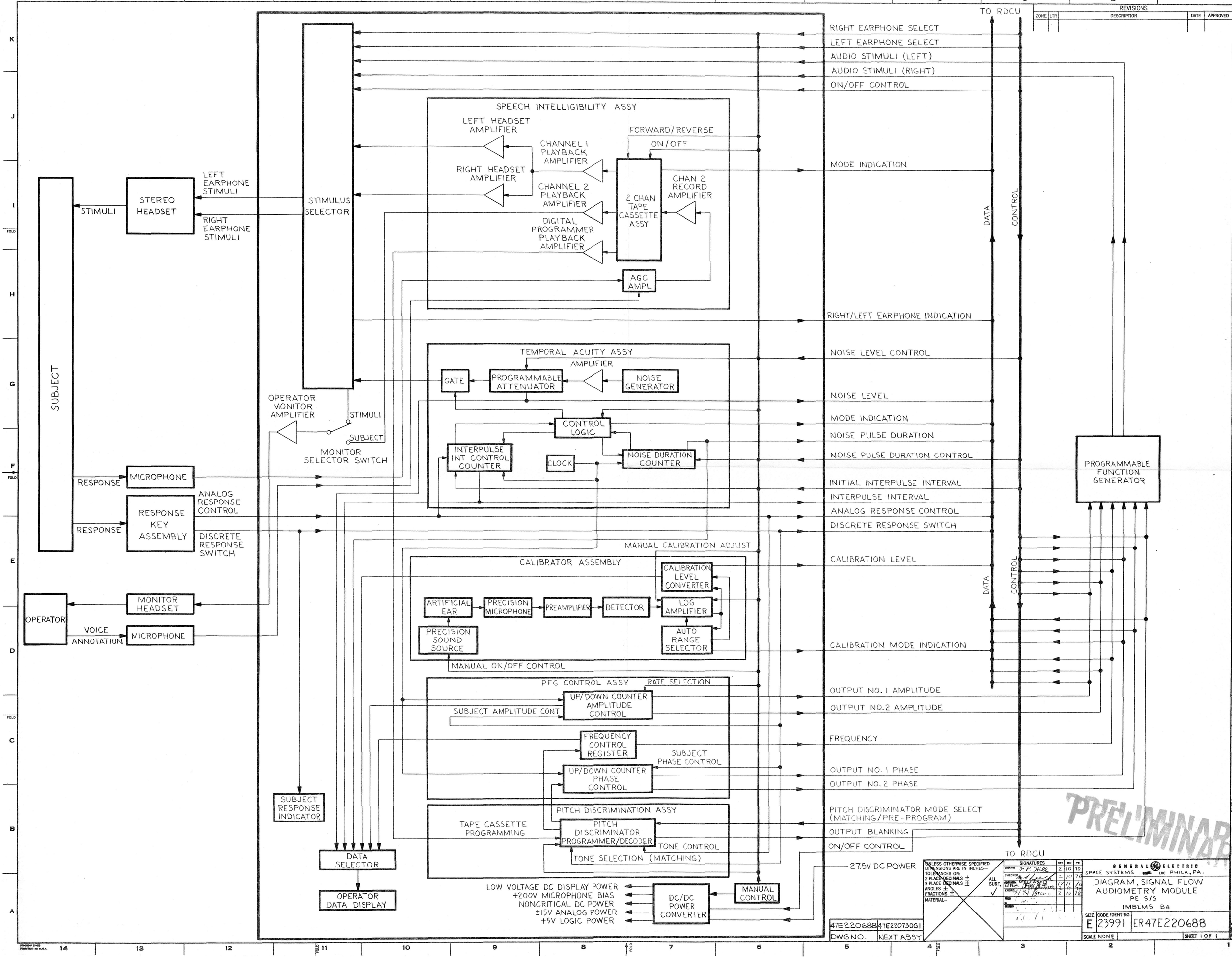
REV E

ER47E220685

SIZE E

PRINTED IN U.S.A.


SAMPLE ACQUISITION
SAMPLE PREPROCESSING
SAMPLE HANDLER INTERFACE
MEASUREMENT DEVICES
SUBJECT
BLOOD VENIPUNCTURE
URINE (VOIDS)
SWEAT
BLOOD FINGER STICK/EAR
BACTERIA FUNGI VIRUSES BLASTED CELLS FOR SAMPLE PREPROCESSING
ENVIRONMENT
OPERATOR
HEAT SEAL AUTOCLAVABLE BAG
UV
SWEAT ACQUISITION MODULE SWEAT COLLECTION GARMENT 4 SOCKS
RETURN PACKAGE WITH ANTI-MICROBIAL PACK
TO SAMPLE CONTROLS
CAPILLARY TUBE FLAME SEALED
CAPILLARY STRAW WITH PLASTIC SLEEVE
HEPARINIZED CAPILLARY TUBE
STERILE SAMPLING DEVICES
• SWABS
• CONTACT PLATE
• SCRAPING TOOLS
• COLLECTION PHIALS
POWER CONDITIONER
SEQUENCE CONTROLLER
STATUS DISPLAY AND INDEPENDENT MANUAL CONTROL
PWR TO ALL COMPONENTS
MANUAL CONDITIONER
CENTRIFUGE
ROTOR CONDITIONER
ROTOR
CENTRIFUGE CONTROL PANEL
SAMPLE PREPROCESSING ASSEMBLY
ROTATION DETECTOR
DIRECT OBSERVATION
REMOVABLE SAMPLE HOLDER
PRECISION SYRINGE
TO LIQUID WASTE COLLECTION
ASPIRATING STATION
ROW
COLUMN
DATA
ADDRESS
FROM CONTROL BUS
TO DATA BUS
SAMPLE HANDLER INTERFACE
FOUR CONTAINERS WITH REAGENTS, SAMPLE ELEMENTS
FOUR CONTAINER WITH DILUTED SAMPLE
ONE CONTAINER WITH SAMPLE OR DILUTED SAMPLE
ONE CONTAINER WITH SAMPLE OR DILUTED SAMPLE
ONE STAINED SLIDE READY FOR OPTICAL SEGMENT EXAMINATION
TWO STAINED SLIDE READY FOR OPTICAL SEGMENT EXAMINATION
FROM MAN'S HOME FOR HOME SUBSITE DAILY EXAMINATION APPLIED SAMPLES
FINGER PUNCTURE
HEPARINIZED CAPILLARY TUBE W/ BLOOD
HEPARINIZED CAPILLARY TUBE WITH BLOOD
STERILE CONTAINER WITH SAMPLE INCUBATED ORGANISMS ARTIFACTS CULTURE ETC. ETC.
USA COLLECTION CONTAINER
MEASUREMENT DEVICES
FLUID CONDITIONER
INCUBATOR CONTROLLER
ROTATION DETECTOR MODULE
TRANSDUCER
BIOCHEMICAL ANALYZER MODULE
ILLUMINATOR
MICROSCOPE
SLIDE
READ HEAD
SLIDE STORAGE
TABLET
APPARATUS CAPTAIN
MICROBIOLOGICAL CHEMISTRY OBSERVATION MODULE
SPECIMEN TUBE
SPECIMEN HANDLER
INCUBATE
SUB-CULTURE
TO MICROSCOPE
OPERATOR
MICROBIOLOGICAL PARASITE
CULTURE / SAMPLE FEED THROUGH
POWER +25VDC
PULSE DETECTOR
PULSE HEIGHT ANALYZER MODULE
PARTICLE DETECTOR MODULE
ELEMENT ANALYZER MODULE
GAS ANALYZER MODULE
SAMPLE STORAGE
TO SOLID WASTE COLLECTION
TO LIQUID WASTE COLLECTION
TO SLIDE STORAGE
TO SLIDE STORAGE CHAMBER
TO CULTURE GROWTH CHAMBER
LEGEND :
RDM RADIATION DETECTOR MODULE
BDM BIO-CHEMICAL ANALYZER MODULE
PDM PARTICLE DETECTOR MODULE
EDM ELEMENTS ANALYZER MODULE
GDM GAS ANALYZER MODULE
DDM DIRECT OBSERVATION MODULE
MFP MULTI-FUNCTIONAL FURNACE
WMS WASTE MANAGEMENT SYSTEM
PRELIMINARY
DWG NO. 45 REV



REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED

SIGNATURES	DAY	MO	YR
DRAWN	2	10	70
CHECKED		10	70
ENGR	2	10	70

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA.

DIAGRAM, SIGNAL FLOW
AUDIOMETRY MODULE
PE 5/S
IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220688

SCALE NONE SHEET 1 OF 1

DWG NO.	NEXT ASSY
47E220688	47E220730G1

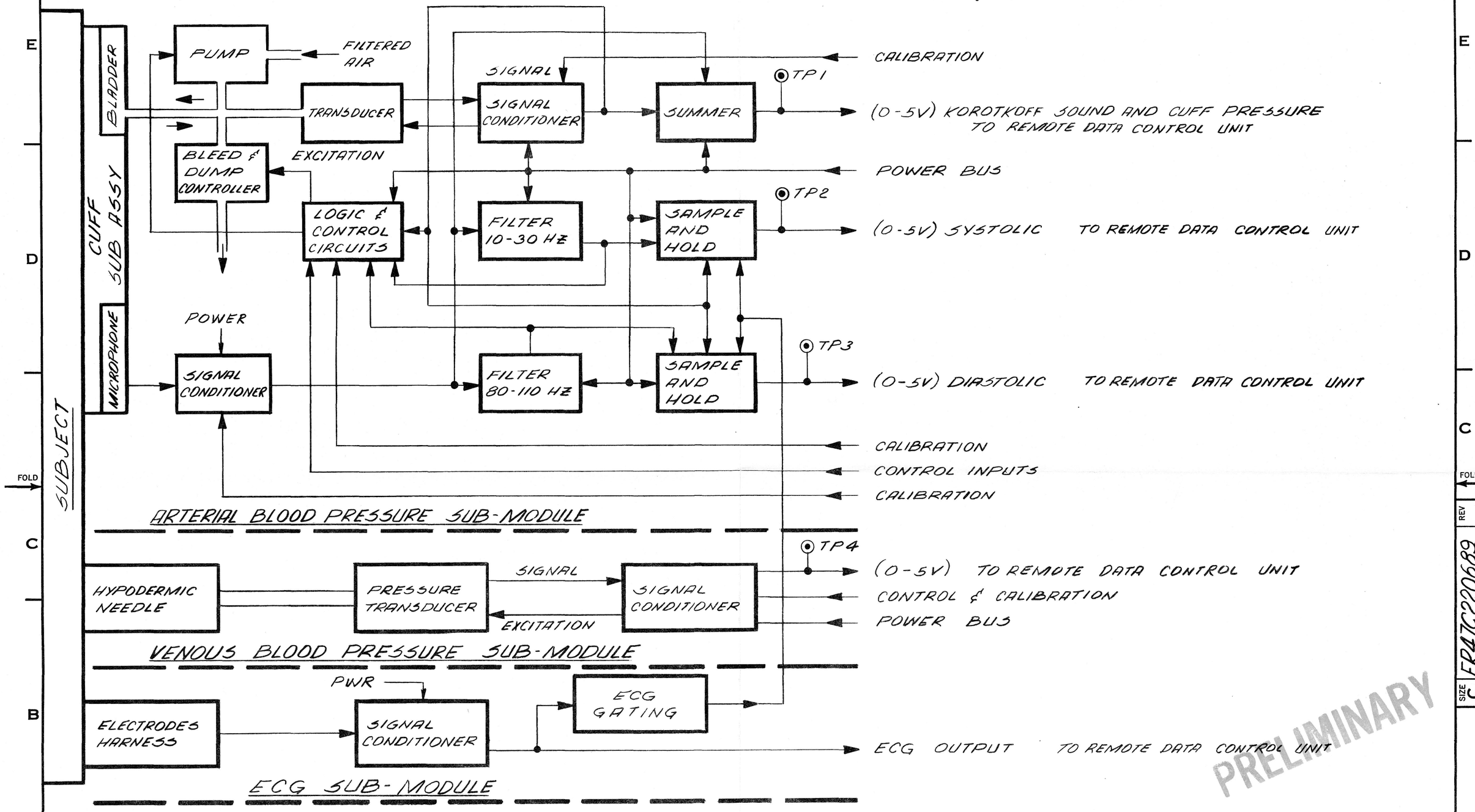
SIZE E ER47E220688 REV

SIZE E ER47E220688 REV

SIZE		REV
C	ER47C220689	

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED



PRELIMINARY

47C220689	47E220731 G1, G2
DWG NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	14	8	70
CHECKED	24	9	70
[redacted] REALENSED J.B. [illegible]	10	11	10
ENGRG	25	1	70
[redacted]	7	10	1
[redacted]			

GENERAL ELECTRIC
SPACE SYSTEMS [redacted] LOC PHILA PA

DIAG SCHEMATIC-ELECTRO-MECH
BLOOD PRESSURE MODULE
PE 5/5
IMBLM5 B4

SIZE	CODE IDENT NO.	
C	23991	ER47C220689

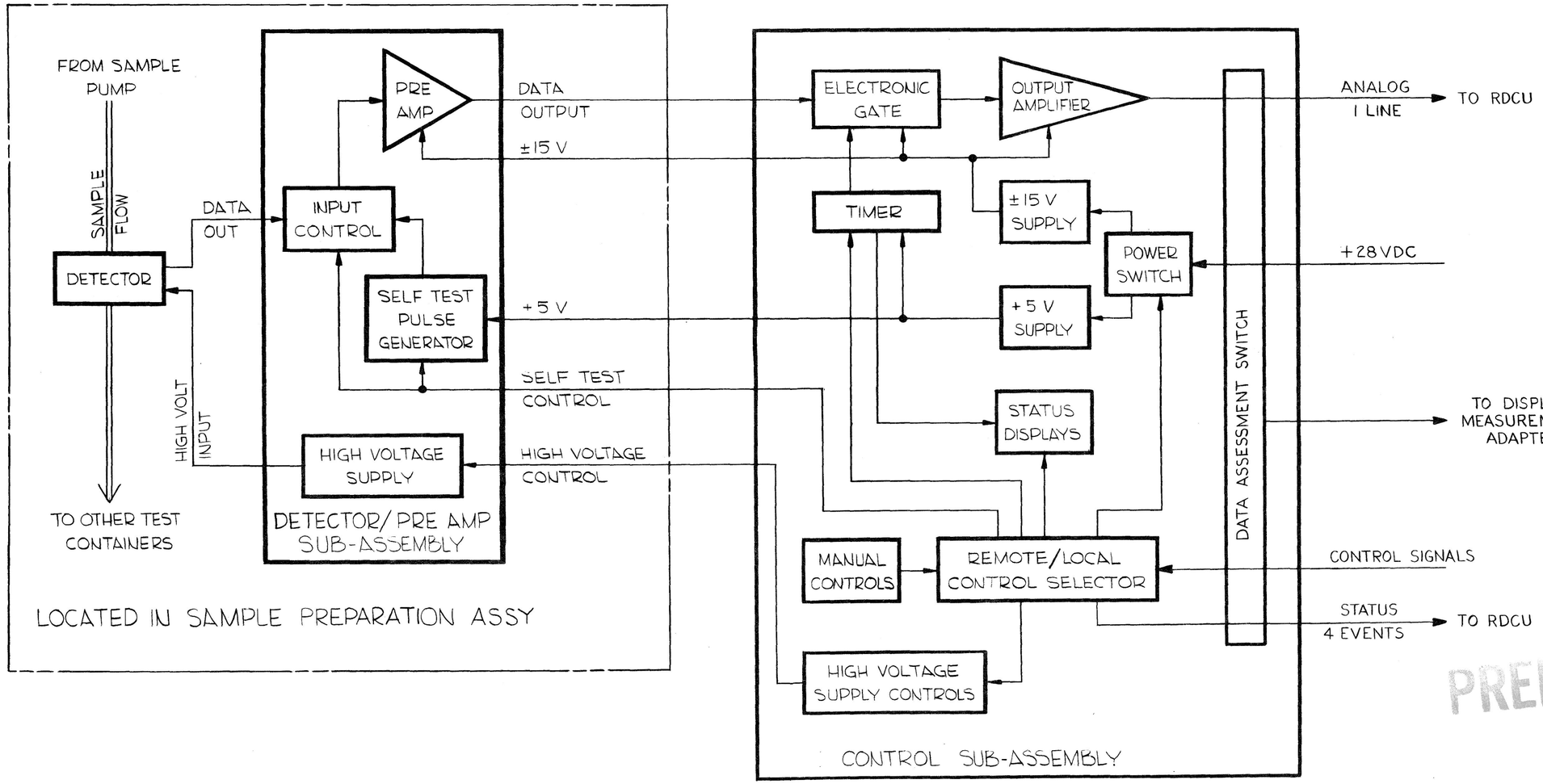
SCALE [illegible] SHEET 1 OF 1

DIST TO

SIZE C ER47C220689 REV

FN 903-F (3-68)
PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



PRELIMINARY

47D220690	47E220717G1
DWG. NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES		DAY	MO	YR
DRAWN	T. KAMPF	28	9	70
CHECKED	RELEASED PCER	30	9	70
ISSUED	RELEASED PCER	10	11	70
ENGRG		30	9	70
		30	9	70
		1	10	70
		1	10	70
		1	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC. PHILA. PA.

DIAGRAM SIGNAL FLOW
RADIATION DETECTOR MODULE
LABORATORY ANALYSIS SUB-SYSTEMS
IMBLMS B4

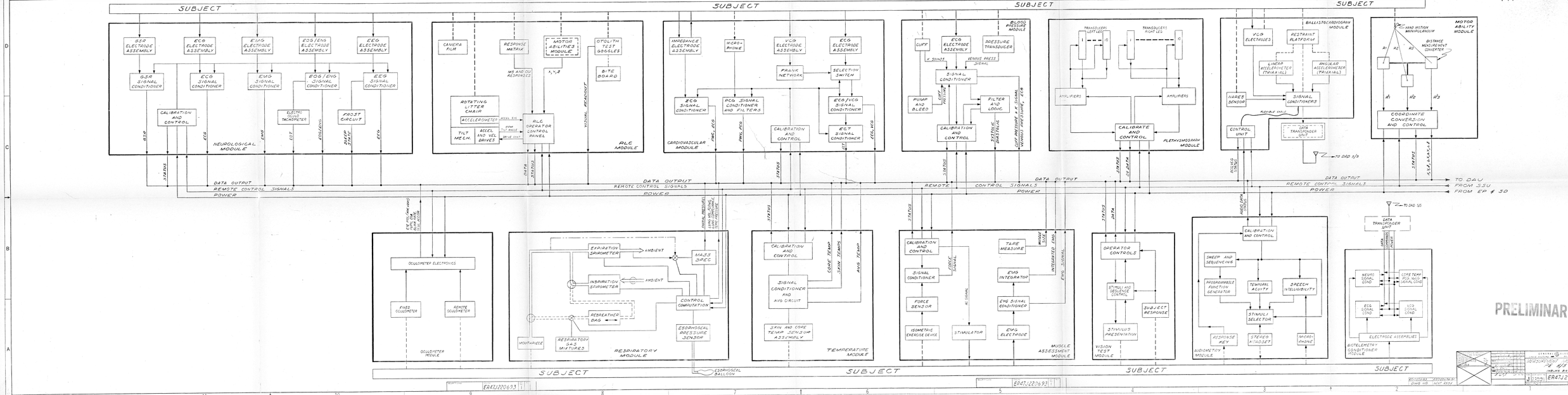
SIZE	CODE IDENT NO.	
D	23991	ER47D220690

SCALE — SHEET 1 OF 1

DIST TO

SIZE D ER47D220690 REV

FN-684-F (3-68)
PRINTED IN U.S.A.



ER47J220693

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE / APPROVED

SIGNAL CONDITIONER SUB-ASSEMBLY

CONTROL SUB-ASSEMBLY

SUBJECT

STIM-ULATION

PRE AMP

GND

FREE LENGTH FOR ELECTRODE ATTACHMENT

BI-AXIAL ACCEL

INPUT PROTECT

SAFETY

CALIBRATE

EEG

EEG

EEG

EEG

EEG

EEG

EOG

EOG

EMG

EMG

GSR

ECG

POST REGULATORS

ACCELEROMETER "X" AXIS

ACCELEROMETER "Y" AXIS

ANALOG OUTPUT

SAFETY SENSE

INPUT PROTECT

ANALOG OUTPUT

SAFETY SENSE

INPUT PROTECT

CALIBRATE

+5 VDC

+15 VDC

-15 VDC

FROST SLEEP ANALYZER CIRCUIT

SLEEP STATE

POST AMPLIFIERS

FINE GAIN

EEG GAIN

EOG GAIN

EMG GAIN

GSR GAIN

ECG GAIN

EOT

RESPIRATION RATE CIRCUIT

ECT

FROM ALL 12 SAFETY SENSE LINES

SAFETY

TO FRONT PANEL INDICATORS

TO ALL 12 INPUT PROTECT LINES

INPUT PROTECT

TO FRONT PANEL INPUT PROTECT SWITCHES

INTERNAL

INTERNAL

PRE REGULATOR

POWER SUPPLY

LOCAL / REMOTE SWITCH

SWITCH

ASSESSMENT

DATA

EEG #1

EEG #2

EEG #3

EEG #4

EEG #5

EEG #6

EOG #1

EOT

EOG #2

EMG #1

EMG #2

GSR

RESPIRATION RATE

ECG

ECT

TO MONITOR

TEST POINT

SAFETY INDICATION

REMOTE CONTROL LINE

ACTIVITY #1

ACTIVITY #2

28V RETURN

+28 VDC

TO EP&SD

REMOTE STATUS INDICATION

TO REMOTE DATA CONTROL UNIT

TO REMOTE DATA CONTROL UNIT

PRELIMINARY

UNLESS OTHERWISE SPECIFIED	SIGNATURES	DAY	MO	YR
DIMENSIONS ARE IN INCHES	DRAWN C Stuckert	28	12	70
TOLERANCES ON:	DESIGN P Marinitz	28	12	70
2-PLACE DECIMAL ±	ENGR [illegible]	12	11	70
3-PLACE DECIMAL ±	MFG [illegible]	29	12	70
ANGLES ±	QUAL P Marinitz	29	12	70
FRACTIONS ±		1	10	70
MATERIAL –		1	10	70
ALL SURF.		1	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PENNA.

DIAGRAM, SIGNAL FLOW
NEUROLOGICAL MODULE
PE 3/S IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220694

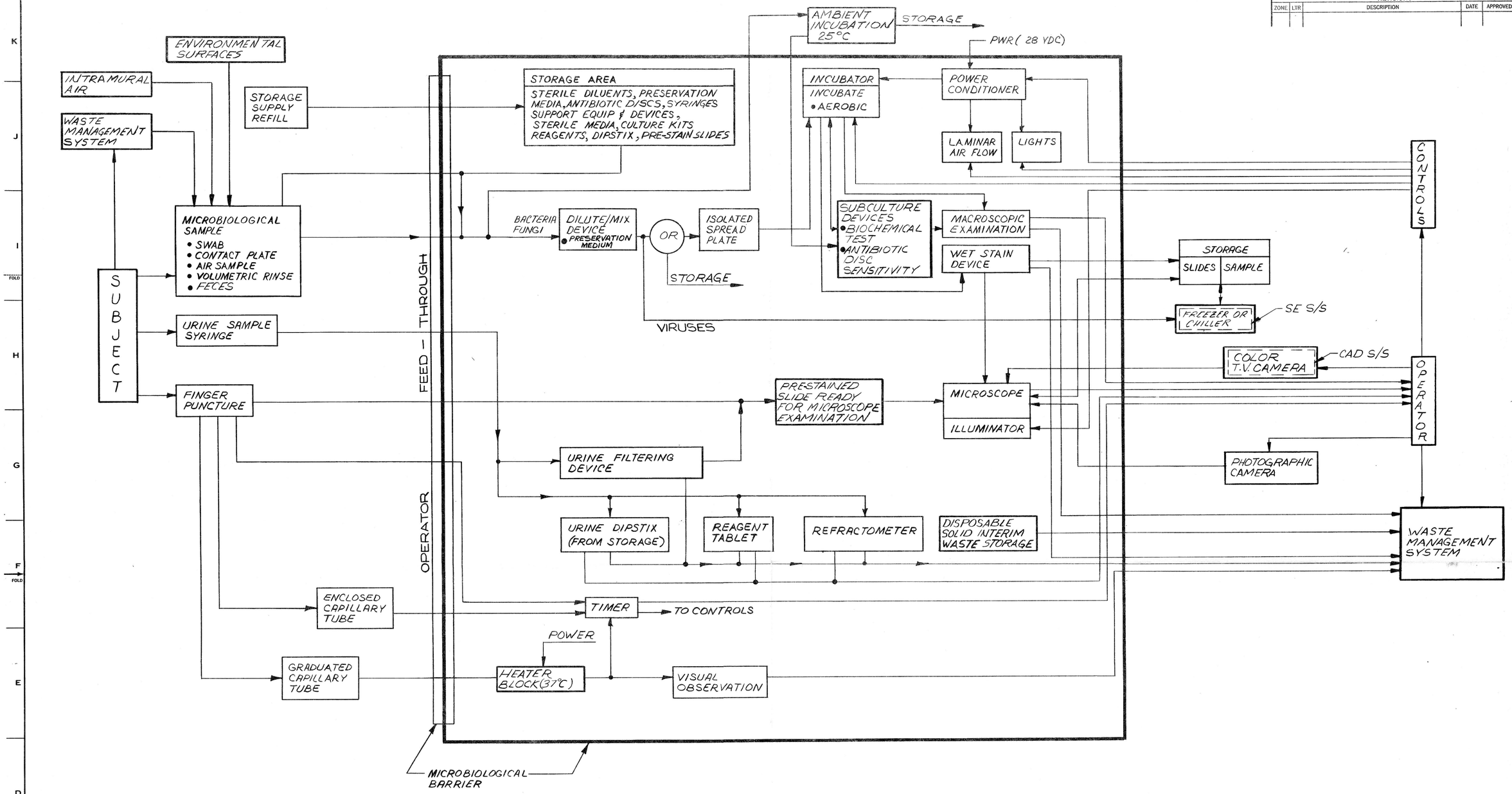
SCALE X SHEET 1 OF 1

47E220694 DWG NO. | 47E220725G1 NEXT ASSY

ER47E220694 REV E

ER47E220694 REV E

ER47E220694 REV E



PRELIMINARY

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

47E220695	47E2201696I	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓	SIGNATURES: DRAWN R Brady 3 1 8 70; CHECKED M Hart 2 10 70; ENGR'G PROJ. ENGR. D Pearson 12 11 70; ENGR'G MGR. David Wright 2 10 70; MFG. [illegible] 2 10 70; QUAL. [illegible] 2 11 70
DWG NO	NEXT ASSY		

GENERAL ELECTRIC
SPACE SYSTEM LOC PHILA, PA

DIAG, SCHEMATIC-FUNCTIONAL MICROBIOLOGICAL/DIRECT OBSERVATION MODULE LAS/S IMBLMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220695 | REV

SCALE ¾ | SHEET 1 of 1

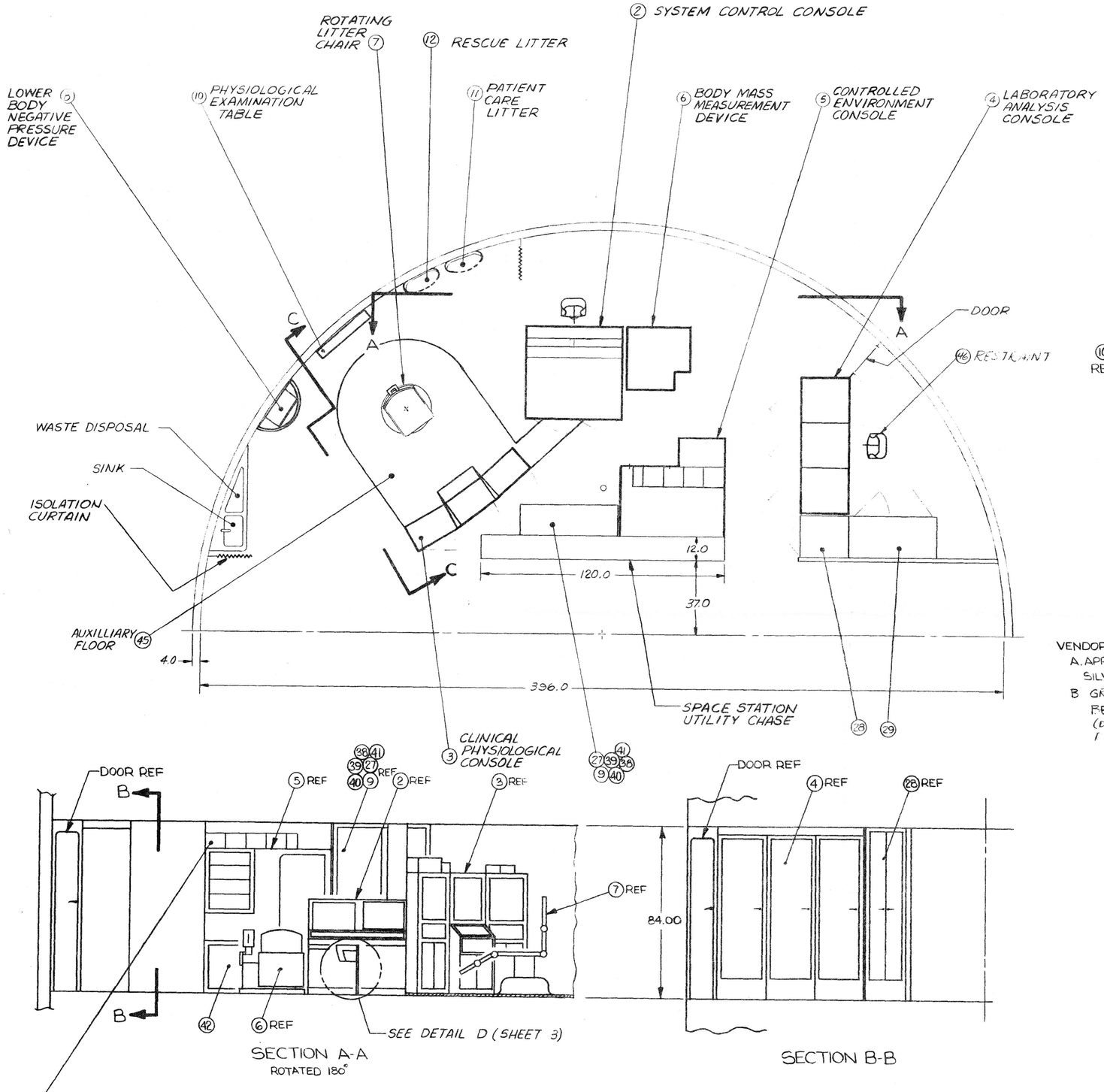
ER47E220695 REV E

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70SD5046 IMBLMS SYSTEM, PRELIMINARY CONTRACT END ITEM SPECIFICATION
70SD5399 SYSTEM DESCRIPTION
70SD5386 FINAL REPORT, PHASE B-4

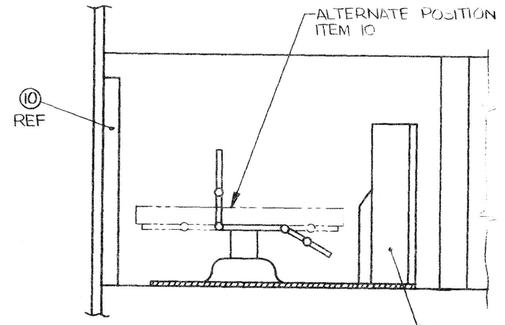
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

PRELIMINARY



SECTION A-A
ROTATED 180°

SECTION B-B



SECTION C-C

ENVIRONMENTAL SENSORS
REF: SUPPORT EQUIPMENT CONCEPT SELECTION DOC NO. 70SD5391

- TEMPERATURE / ATMOSPHERIC PRESSURE
- SPACE-CRAFT MOTION
- RADIATION
- SOUND
- HUMIDITY

VENDOR NOTES
A. APPLIED PHYSICS LAB
SILVER SPRINGS, MARYLAND
B GRUMMAN AEROSPACE
BETHPAGE NEW YORK
(DEVELOPMENT ITEM)
UNDER CONTRACT
NAS9-10456

(G1)

REDUCED SIZE PRINT
SCALE: 0 1 2 INCHES

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
						LIST OF MATERIAL	
				47E220696G1			
				DWG NO.	NEXT ASSY		
						ASSEMBLY	
				47E220696G1	1	ASSEMBLY	
				47E220696G1	2	SYSTEM CONTROL CONSOLE	
				47E220696G1	3	CLINICAL-PHYSIOLOGICAL CONSOLE	
				47E220696G1	4	LABORATORY ANALYSIS CONSOLE	
				47E220706G1	5	CONTROLLED ENVIRONMENT CONSOLE	
				47A220700P1	6	BODY MASS MEASURING DEVICE	A
				7214-500051	7	ROTATING LITTER CHAIR	
				47E228106G1	8	LOWER BODY NEGATIVE PRESSURE DEVICE	
				47E220696P9	9	ERGOMETER	
				47E220696P10	10	PHYSIO-EXAMINATION TABLE	
				47E220696P11	11	LITTER, PATIENT CARE	
				47E220696P12	12	LITTER, RESCUE	
				47E220696P13	13	ROTATING, SWIVEL SURGICAL LIGHT	
				47E220696P14	14	C-CLAMP (SURGICAL LIGHT)	
				47E220696P15	15	ANGLE, TABLE SUPPORT	
				47E220696P16	16	PLATE, MOUNTING (3 D DEVICE)	
				47E220696P17	17	ANGLE, SUPPORT	
				47E220696P18	18	ARM, ADJUSTABLE	
				47E220696P19	19	ARM, SUPPORT	
				47E220696P20	20	C-CLAMP (X-RAY)	
				47E220696P21	21	SUSPENSION ARM (X-RAY)	
				47E220696P22	22	ROLL BAR, LITTER	
				47E220696P23	23	HEART-LUNG RESUSITATION EQUIP	
				47E220696P24	24	OXYGEN TANK	
				47E220696P25	25	STRAP	
				47E220762G2	26	3 D DEVICE	
				———	27	STORAGE CABINET-SPACE STATION	
				———	28	STORAGE CABINET-SPACE STATION	
				———	29	STORAGE CABINET-SPACE STATION	
				47E220723	30	TYPICAL CIRCUIT PE S/S	
				47D220684	31	BLOCK DIAGRAM FUNCTION SIGNAL FLOW BE S/S	
				47C220681	32	BE S/S	
				47E220677	33	PE S/S	
				47E220675	34	FUNCTION CAD S/S	
				47J220656	35	EQUIPMENT LA S/S	
				47J220693	36	BLOCK DIAGRAM PHYSIO MEASUREMENT MODULE	
				47J222812	37	SYSTEM SIGNAL FLOW	
				47E220732G4	38	MUSCLE ASSESSMENT DEVICE	
				47E220719P1	40	PAN & TILT UNIT	
				47C220764P1	39	CAMERA, TV COLOR	
				47E220731G2	41	PUMP ASSY, BLOOD PRESSURE	
				47E222882G1	42	PORTABLE CONSOLE	
				47E220722G2	43	BALLISTOCARDIOGAM MEAS & SIGNAL COND	
				47E222845	44	DIAG, ELEC, PWR DISTR	
				47E220696P45	45	FLOOR, AUXILLARY, HARNESS & RESTRAINT	
				47J220863	46	DRAWING TREE, PHASE B4	
				———	47	RESTRAINT, MID-TORSO	B

REQUIREMENTS PER ASS'Y.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES		DAY	MO	YR
DRAWN	Lu Ramirez	19	10	70
CHECKED	W. Hall	20	11	70
RELEASED	[illegible]	21	11	70
ENGR	[illegible]	24	11	70
MGR	[illegible]	25	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA.

SYSTEM CONFIGURATION
IMBLMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220696

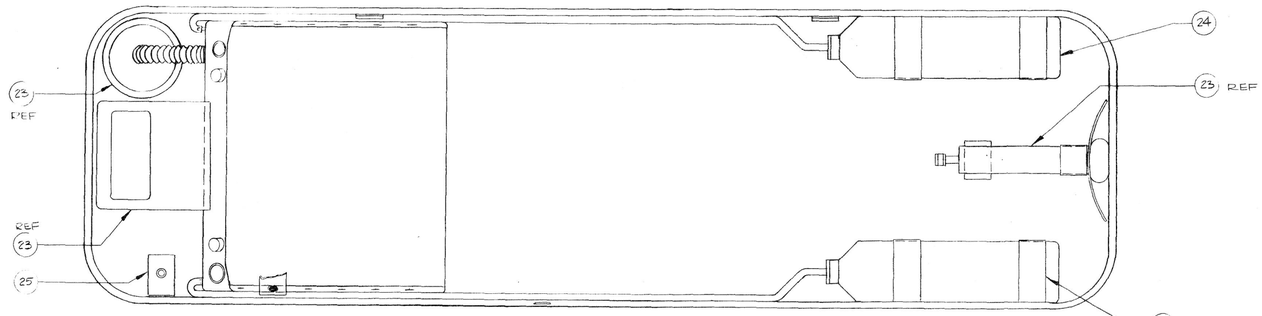
SCALE 1/20 | SHEET 1 OF 3

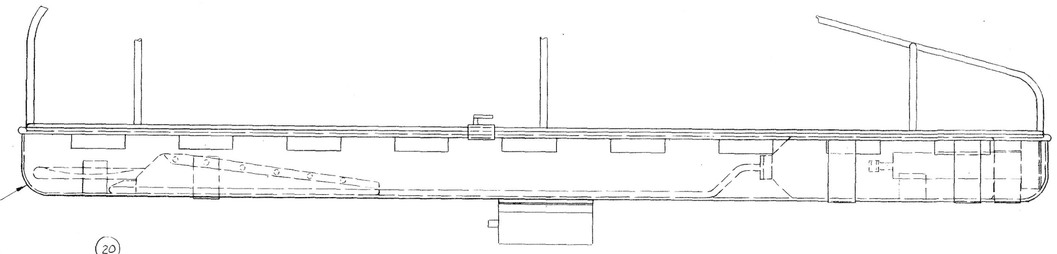
REV E | ER47E220696

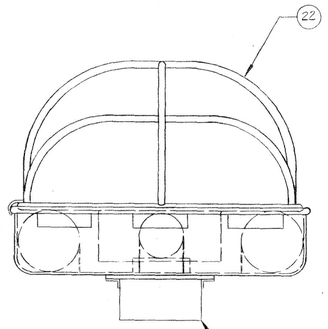
REV E | ER47E220696

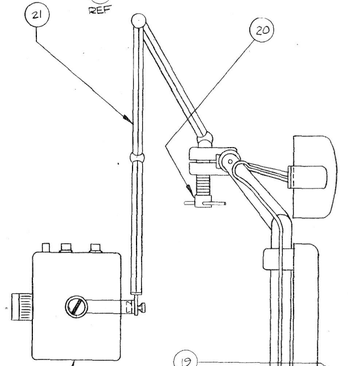
PRINTED IN U.S.A.

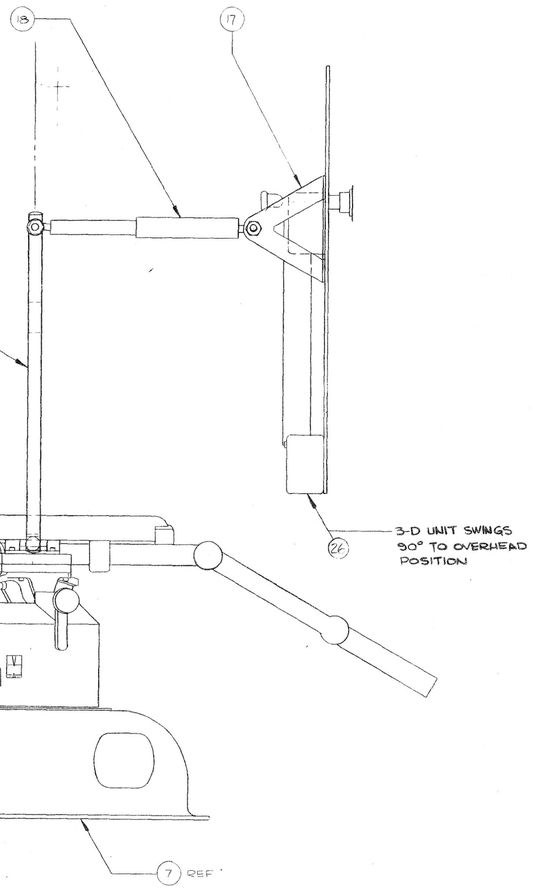
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

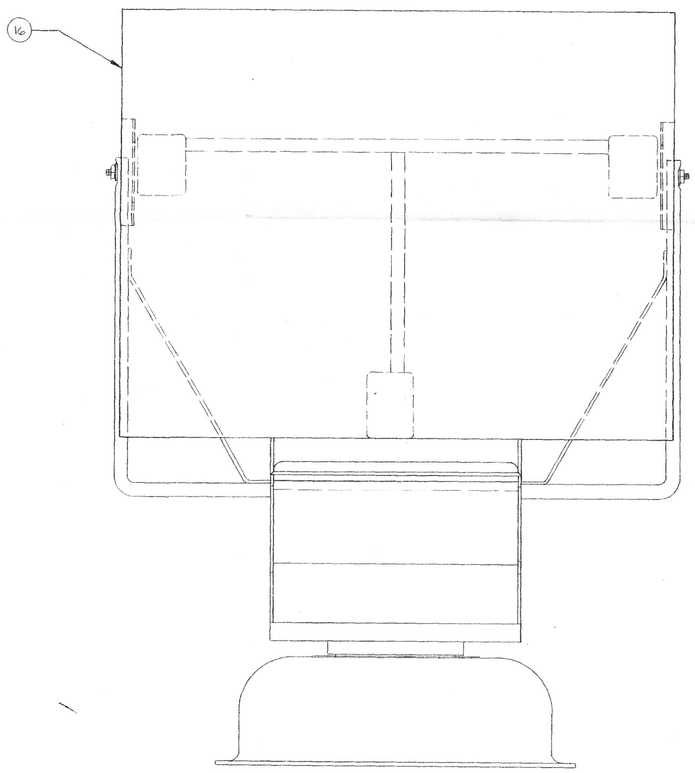












PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	SIGNATURES	DAY	MO	YR
ALL SURF ✓	DRAWN F. Kunisch	5	11	70
	CHECKED			
	ENGR RELEASED	21	11	70
	ENGR	20	11	70
	R.J. Dy Hanlon NO NAME	19	11	70
		20	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT LOC PHILA., PA.

SYSTEM CONFIGURATION
IMBLMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220696

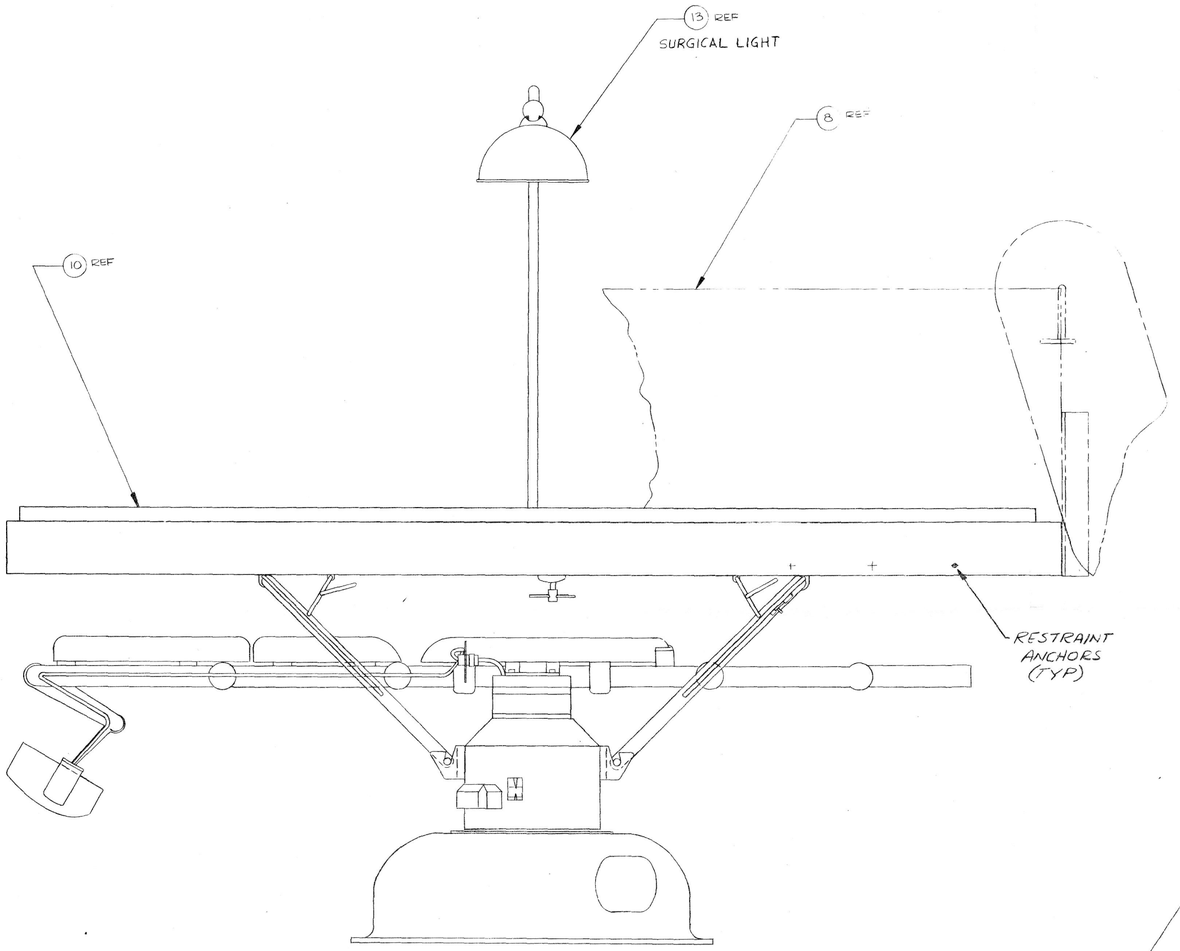
SCALE 1/4 | SHEET 2 OF 3

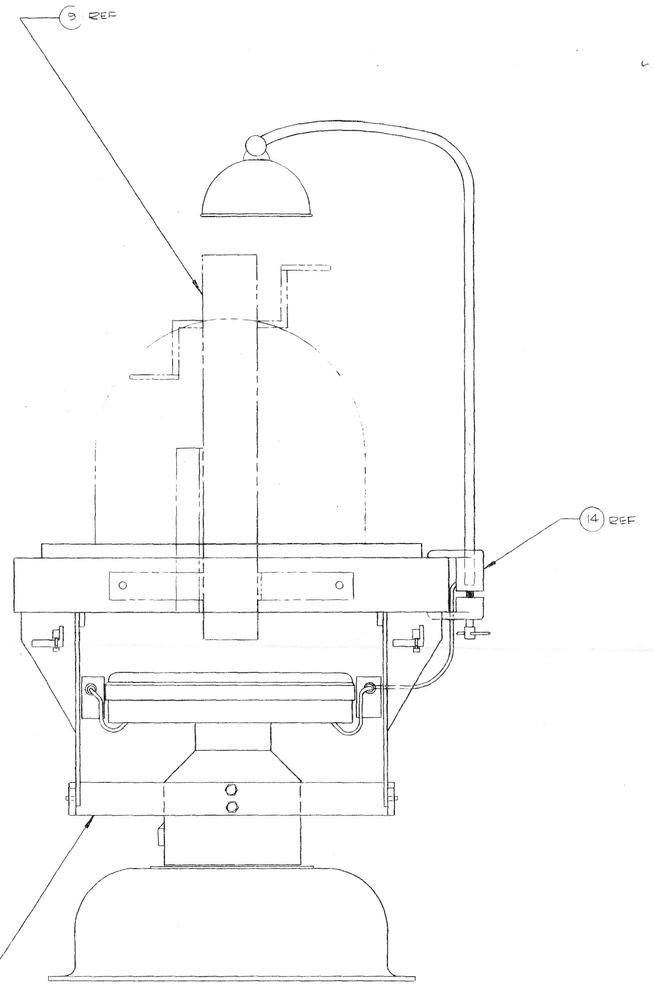
REV ER47E220696 SIZE E DIST 10

REV ER47E220696 SIZE E DIST 10

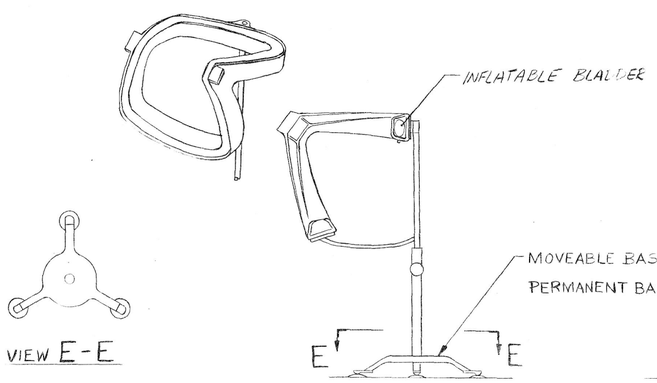
FORM 9-80 PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





PRELIMINARY



VIEW E-E

DETAIL D
SCALE - NONE

MID-TORSO RESTRAINT

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES — TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL —	ALL SURF ✓	SIGNATURES	DAY	MO	YR
		DRAWN			
		CHECKED			
		ENGRG			

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

SYSTEM CONFIGURATION
IMBLMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220696

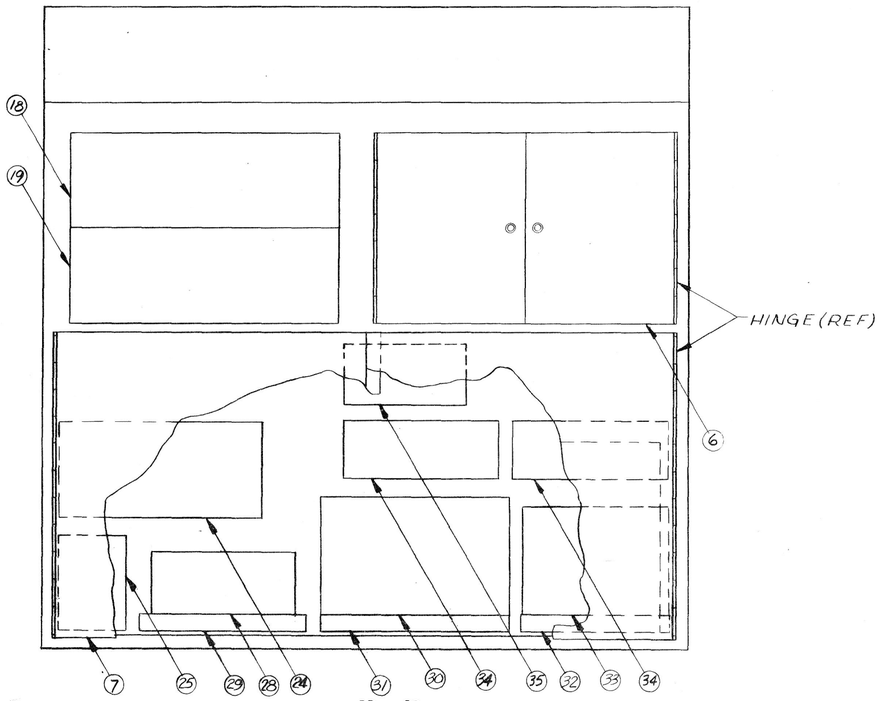
SCALE 1/4 | SHEET 3 OF 3

REV E ER47E220696

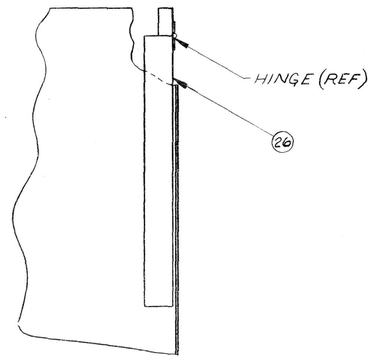
DIST 10

PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



VIEW B-B
SHOWING FULL REAR OF CONSOLE



SECTION C-C

PRELIMINARY

REDUCED SIZE PRINT

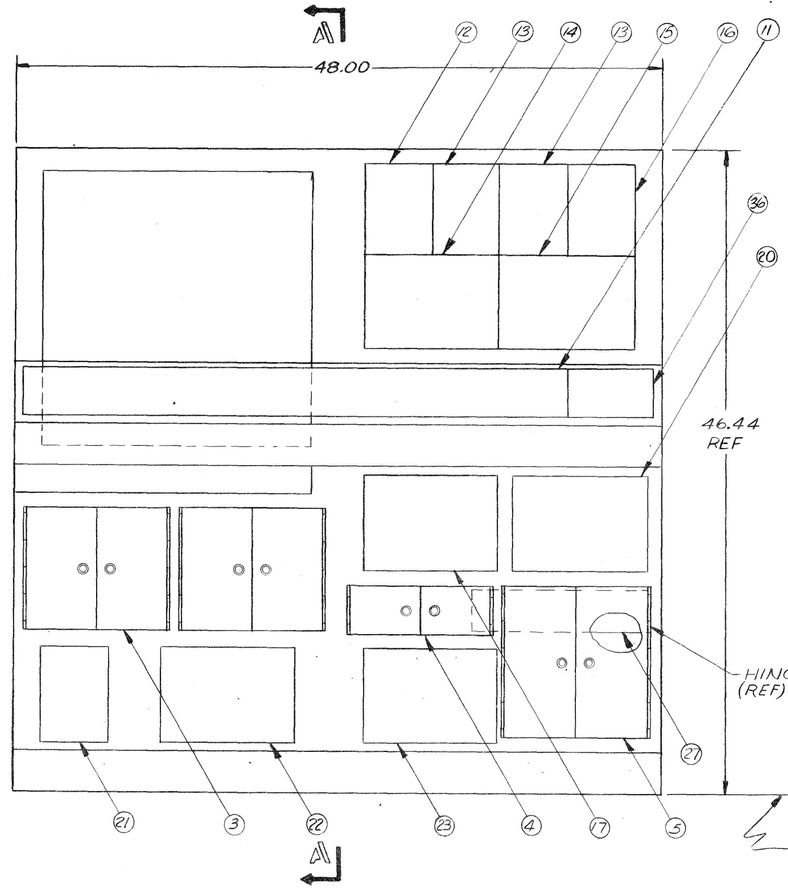
SCALE: 0 1 2 INCHES

NOTES:
1. INTERPRETATION OF DRAWING TERMS & TOLERANCES PER 11BA1660.
2. MARK GE 47E220697 GROUP NO. OR PART NO AS APPLICABLE PER 11BA1526, CLASS 21.
3. ALL OUTSIDE CORNERS .75 RAD
4. ITEM 16 IS SPACE SYSTEM SUPPLIED

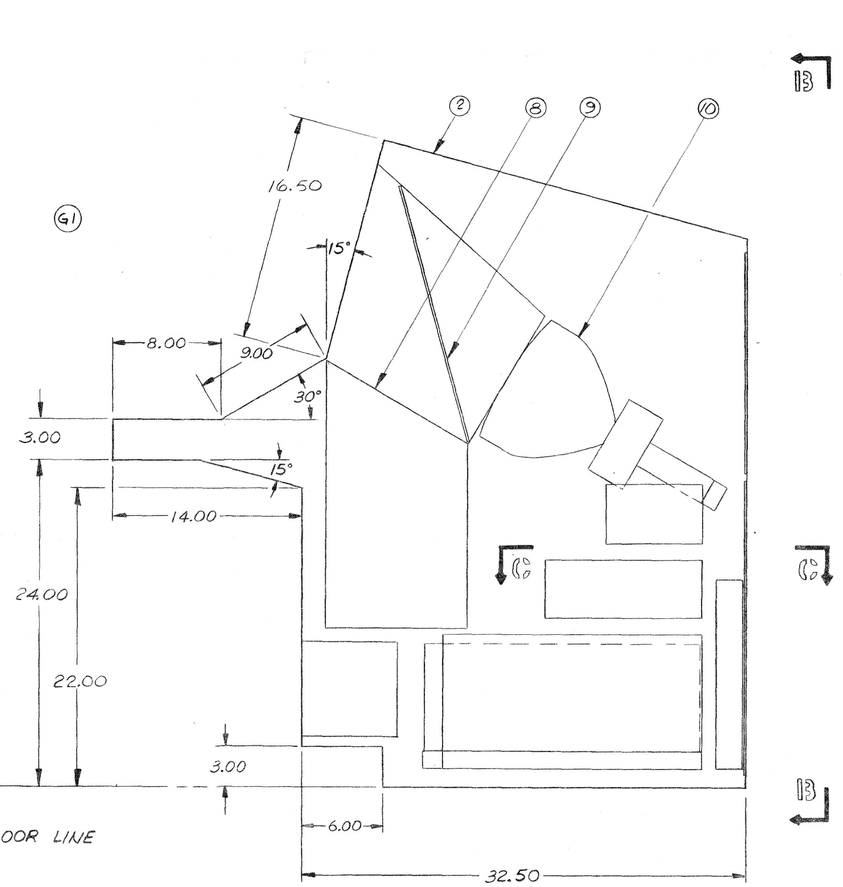
VENDOR NOTES
A. GENERAL ELECTRIC, APOLLO SYSTEMS DAYTONA BEACH, FLORIDA
B. INTERNATIONAL BUSINESS MACHINES CORP. HUNTSVILLE, ALABAMA

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70SD5258 CONTROL & DISPLAY SUBSYSTEM SPEC
70SD5206 DATA ACQUISITION & DISTRIBUTION SUBSYSTEM SPEC
70 SD 5256 COMPUTER SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.



SECTION A-A



G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
				—	36	INTERCOM (SPACE STATION SUPPLIED)	
				70-225-600	35	CONTROL UNIT	B
				70-225-200	34	BULK STORAGE	B
				70-225-502	33	COMPUTER COLD PLATE	B
				70-225-500	32	COMPUTER	B
				70-225-302	31	MASS MEMORY COLD PLATE	B
				70-225-300	30	MASS MEMORY	B
				70-225-102	29	MICRO PROCESSOR COLD PLATE	B
				70-225-100	28	MICRO PROCESSOR	B
				70-225-303	27	MASS MEMORY POWER UNIT	B
				70-225-102	26	COMPUTER MAINTENANCE PANEL	B
				63E901316G1	25	RDCU	A
				63E901315G1	24	I/O CONTROLLER	A
				47E220803G1	23	DISPLAY ADAPTER	
				47E220503G1	22	COMBINED DISPLAY CONTROLLER	
				47E220303G1	21	VIDEO MIXER	
				47D220281-4G1	20	SCAN CONVERTER	
				47D220765P1B	19	TAPE DECK	
				47D220765P1A	18	VIDEO RECORDER	
				47E220773G1	17	DIGITAL PRINTER	
				47E220697P16	16	STORAGE	4
				47C222815G1	15	ANALOG LOOP RECORDER	
				47C220772G1	14	STRIP CHART RECORDER	
				47D222801G1	13	CAMERA CONTROL UNIT	
				47D222819G1	12	METER & STATUS DISPLAY	
				47X222843G1	11	CONTROL PANEL	
				47C222813P1	10	MONITOR, COLOR TV	
				47E220697P9	9	HALF SILVERED MIRROR	
				47C220771P1	8	VISUAL DISPLAY PROJECTOR	
				47E220697P7	7	DOOR ASSEMBLY, PAIR	
				P6	6		
				P5	5		
				P4	4		
				P3	3	DOOR ASSEMBLY, PAIR	
				P2	2	CONSOLE STRUCTURE	
				47E220697G1	1	ASSEMBLY	

REQUIREMENTS PER ASS'Y. — LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN Kirkpatrick	22	10	70
CHECKED	20	11	70
PROJECT RELEASED	21	11	70
ENGRG APPROVED	20	11	70
MFGR	4	11	70
PROCD	18	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT LOC PHILA., PA.

CONSOLE ASSEMBLY, SYSTEM CONTROL

IMBLMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220697

SCALE 1/4 | SHEET 1 OF 1

47E220697G1 — DWG NO. — NEXT ASSY

ER47E220697 REV E
ER47E220697 REV E

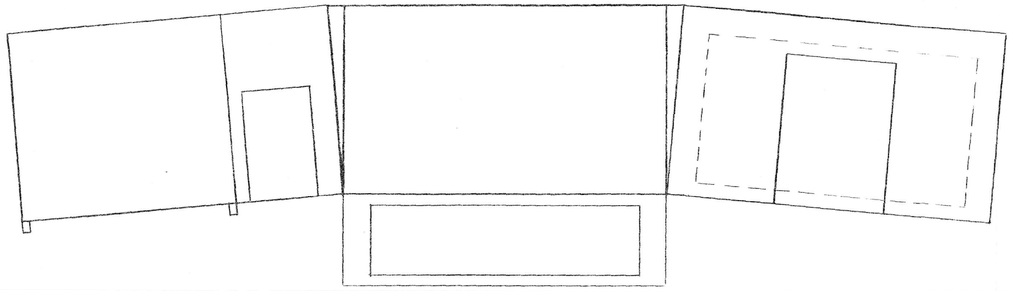
Pro-080-P (8-68) PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

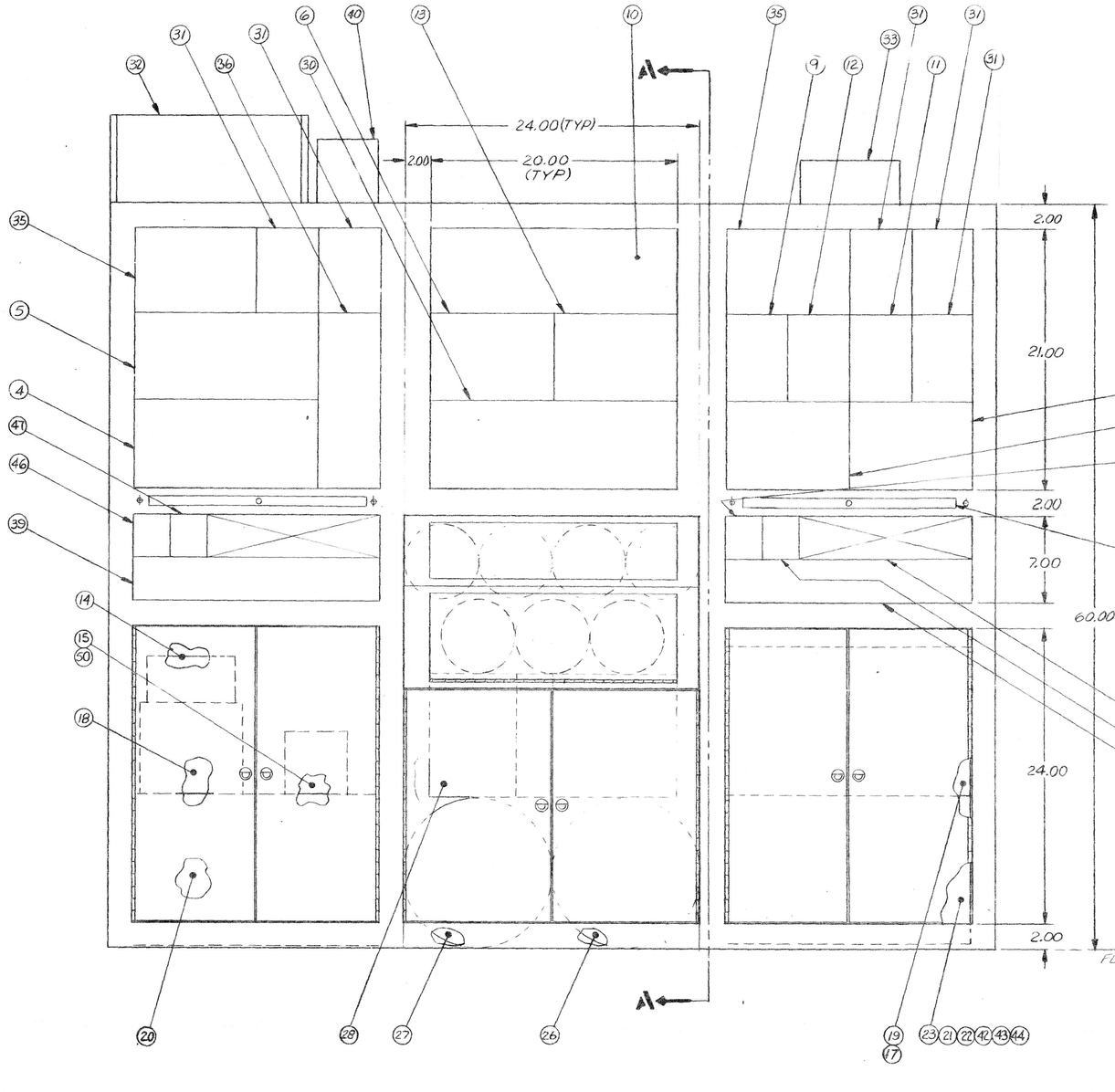
THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

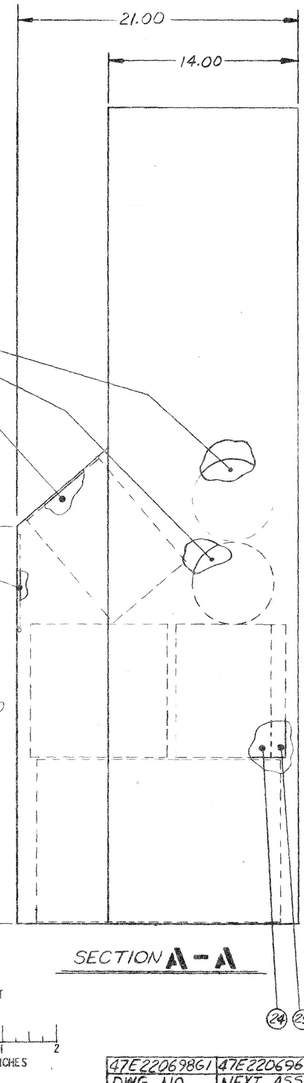
70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5250	CLINICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5398	CLINICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY



CEILING LINE 7'0"





NOTES:
1. ALL OUTSIDE CORNERS .75R
2. DETAIL REQUIREMENTS FOR ITEMS 32, 33, 34 COVERED UNDER GE SPEC 70SD5250.
[3] RESPIRATORY HOSES, MOUTHPIECES AND CONNECTIONS. CONTAINED IN THIS CAVITY. ALL HOSES ARE 1.25 IN I.D.

G4	G3	G2	G1	REQUIREMENTS PER ASS'Y.	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	LIST OF MATERIAL
				2	47E220698P5	51	SURFACE, WRITING	—
				1	47E220732G3	50	MUSCULAR ASSESSMENT PROBE	PE
				1	47E220727G2	49	TEMPERATURE SIGNAL CONDITIONER	PE
				1	47E220732G2	48	MUSCULAR ASSESSMENT SIGNAL COND	PE
				1	47E220726G2	47	CARDIOVASCULAR SIGNAL CONDITIONER	PE
				1	47E220725G2	46	NEUROLOGICAL SIGNAL CONDITIONER	PE
				X	63C501930	45	RDCU, SCHEMATIC	DAD
				1	47D222839G1	44	TABLET/CAPSULE PACKAGING	CE
				1	47D222839G2	43	TABLET/CAPSULE PACKAGING	CE
				1	47D222839G3	42	TABLET/CAPSULE PACKAGING	CE
				4	47E220698P41	41	TANK, RESPIRATORY GAS	PE
				3	47E220698P40	40	TANK, MASS SPECTROMETER CALIB	PE
				2	47E220698P39	39	ELECTRODE STORAGE (20 x 3.5 x 10)	—
				1	47E220737G1	38	MOTOR ABILITIES MODULE	PE
				1	47E220698P37	37	STORAGE (5 x 7 x 10)	—
				1	47E220698P36	36	STORAGE (5 x 14 x 10)	—
				2	47E220698P35	35	STORAGE, RESPIRATORY EQUIPMENT	—
				1	MARK 14	34	RESPIRATOR (BIRD SPACE TECHNOLOGY)	PE
				1	7804A	33	PACEMAKER (HEWLETT-PACKARD)	CE
				1	7802C	32	DEFIBRILLATOR (HEWLETT-PACKARD)	CE
				5	63E901316G1	31	REMOTE DATA CONTROL UNIT	DAD
				1	47E220746G1	30	ROTATING LITTER CHAIR CONTROL PNL	SE
				X	63E901314	29	RDCU, BLOCK DIAG	DAD
				1	47E220698P26	28	MASS SPECTROMETER, MAGNETIC DEFL	PE
				1	47E220698P27	27	INSPIRATION SPIROMETER	PE
				1	47E220698P26	26	EXPIRATION SPIROMETER	PE
				1	47E220698P25	25	REBREATHER BAG	PE
				1	47E220698P24	24	DRYER	PE
				1	47E220698P23	23	DRUG MODULE	CE
				1	47D222836G2	22	DONOR-RECIPIENT CONTAINER	CE
					47D222836G1	21	PARENTERAL DRUG CONTAINER	CE
				1	47E220698P20	20	SURGICAL INSTRUMENTS & SUPPLIES	CE
				1	47E222844G1	19	EXAMINATION KIT	CE
				1	47E220698P18	18	X-RAY MODULE	CE
				1	47E220698P17	17	CUTANEOUS TEST MODULE	PE
				2	47E220698P16	16	SIGNAL COND CONNECTOR PANEL	PE
				1	47D222811G1	15	BIO TELEMETRY CONDITIONER MODULE	PE
				1	47E222841G1	14	ISOLATION BAG	CE
				1	47D222824G1	13	ERGOMETER MODULE	PE
				1	47E220732G1	12	MUSCULAR ASSESSMENT MODULE	PE
				1	47E220726G1	11	TEMPERATURE MODULE	PE
				1	47E220740G1	10	RESPIRATORY CONTROL PANEL	PE
				1	47E220721G1	9	BALLISTOCARDIOGRAM MODULE	PE
				1	47E220743G1	8	PLETHYSMOGRAPH MODULE	PE
				1	47E220731G1	7	BLOOD PRESSURE MODULE	PE
				1	47E222811G1	6	LOWER BODY NEGATIVE PRESSURE MODULE	PE
				1	47E220726G1	5	CARDIOVASCULAR MODULE	PE
				1	47E220725G1	4	NEUROLOGICAL MODULE	PE
				1	47E222821G1	3	STANDARD MEASUREMENT DISPLAY MODULE	CAD
				1	47E220698P2	2	CONSOLE STRUCTURE	SE
				X	47E220698G1	1	ASSEMBLY	SYS

47E220698G1	47E220696G1
DWG NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ±, 3-PLACE DECIMALS ±, ANGLES ±, FRACTIONS ±, MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN Workmen	16	10	70
CHECKED [illegible]	19	10	70
ENGR [illegible]	21	11	70
MFG [illegible]	20	11	70
QUALITY [illegible]	19	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA.

CONSOLE ASSEMBLY, CLINICAL / PHYSIOLOGICAL

IMBLMS B4

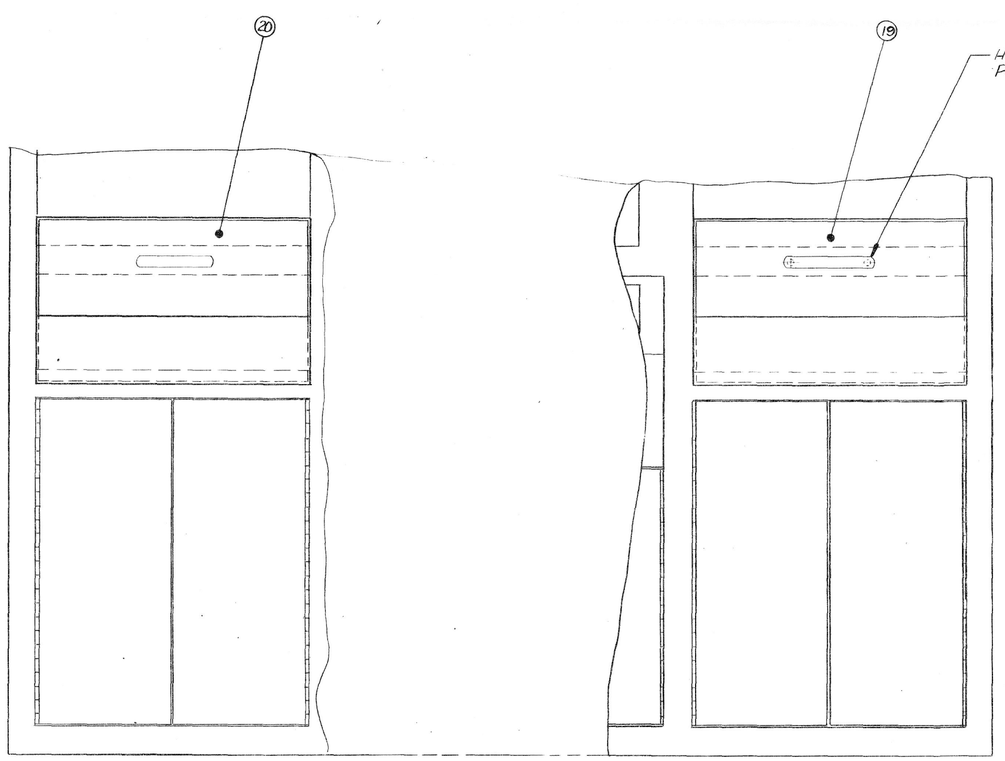
SIZE	CODE IDENT NO.	
E	23991	ER47E220698

SCALE 1/4 SHEET 1 OF 2

REV E ER47E220698
REV E ER47E220698

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

PRELIMINARY



VIEW SHOWING DEPLOYED POSITION OF EXAMINATION & SURGICAL EQUIPMENT

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF ✓

SIGNATURES	DAY	MO.	YR
DRAWN Chi Remien	2	11	70
CHECKED			
APPROVED Rac Ortega for VS Pk	21	11	70
ENGRG			
MFG			
MARKETING R.J. Di Gennaro	15	11	70
NASA ILRV	24	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT LOC PHILA., PA.

CONSOLE ASSEMBLY, CLINICAL/PHYSIOLOGICAL

IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220698

SCALE 1/4 SHEET 2 OF 2

REV E ER47E220699

REV E ER47E220698

DIST NO

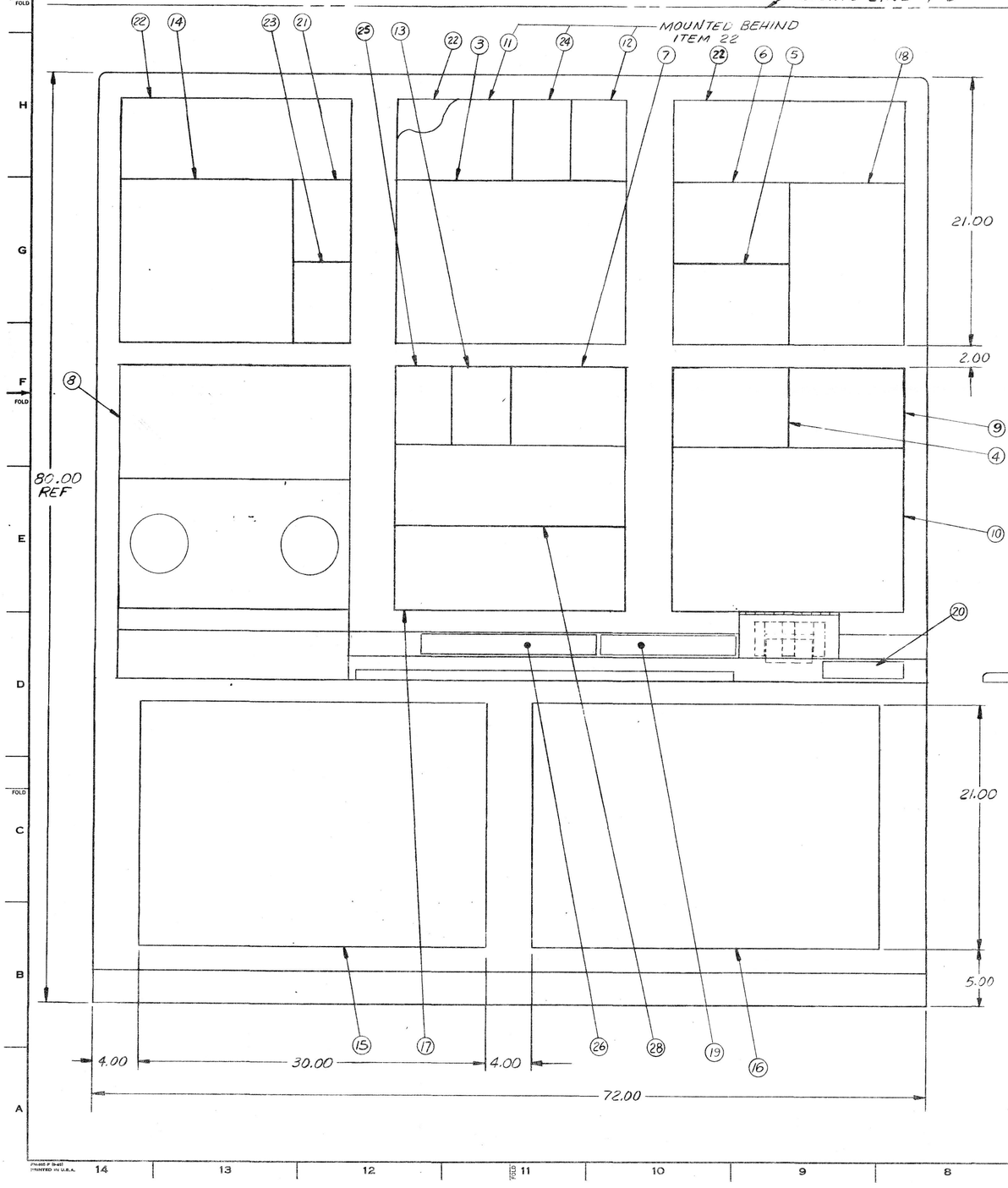
PRINTED IN U.S.A.

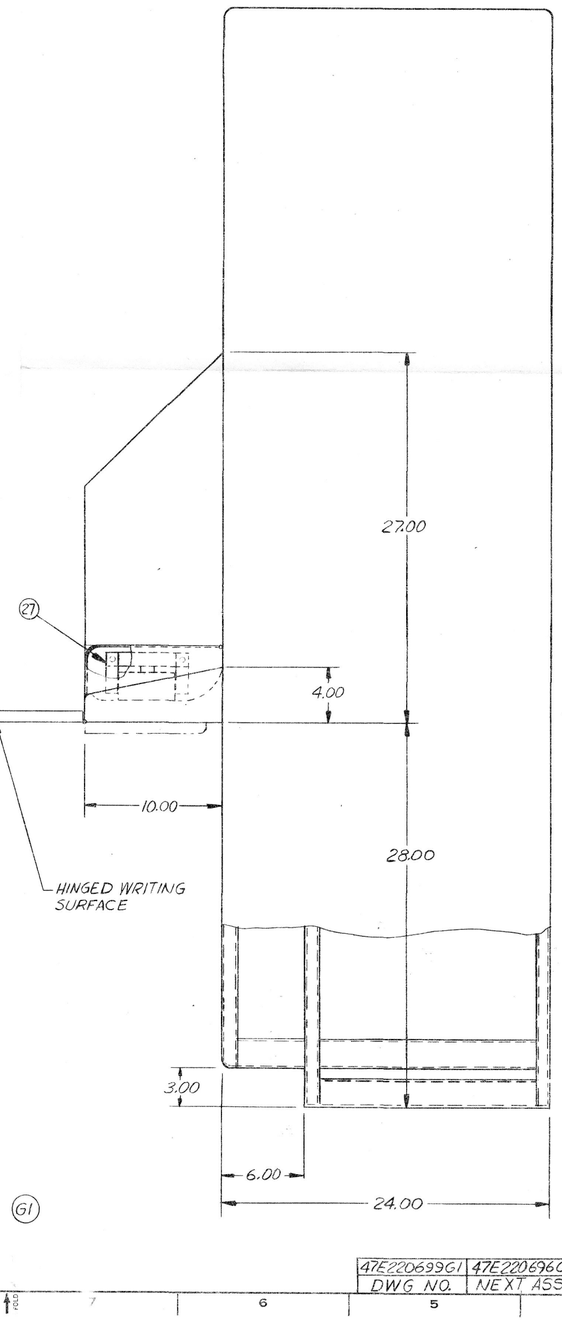
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

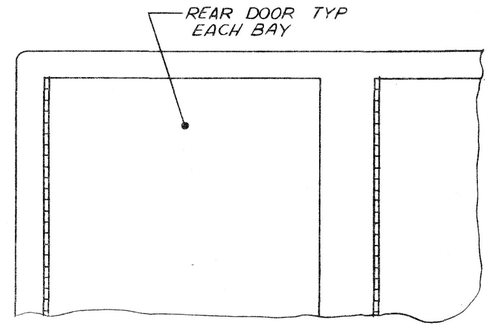
PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES







NOTES
1. ALL OUTSIDE CORNERS .75R

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5252	LABORATORY ANALYSIS SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5390	LABORATORY ANALYSIS SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s). N/A
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	REQUIREMENTS PER ASS'Y.
			1	47E222821G3	28	STANDARD MEASUREMENT DISPLAY MODULE	
			1	47E222812G4	27	CENTRIFUGE MODULE	
			1	47E220699P26	26	KEYBOARD	CAD
			1	47D222819G1	25	METER & STATUS DISPLAY MODULE	CAD
			1	47E222820G1	24	DISPLAY ADAPTER MODULE	CAD
			1	47E220812G1	23	ELECTROLYZER	LA
			2	47E220699P22	22	STORAGE MODULE (20×7×10)	
			1	47E220699P21	21	STORAGE MODULE (5×7×10)	
			1	47E222812G5	20	CENTRIFUGE PANEL	LA
			1	47E220699P19	19	INTERCOM	LA
			1	47E222808G1	18	STERILIZER	SE
			1	47E220699P17	17	LIQUID & SOLID WASTE STORAGE ASSY	SE
			1	47E222780G1	16	CHILLER	SE
			1	47E222806G1	15	FREEZER	SE
			1	47A220724P1	14	SMALL MASS MEASURING DEVICE	SE
			1	47D222801G1	13	TV CAMERA CONTROL UNIT	CAD
			1	63E901316G1	12	REMOTE DATA CONTROL UNIT	DAD
			1	47E222809G1	11	COMBINED DISPLAY CONTROLLER	CAD
			1	47E220812G2	10	SAMPLE ACQUISITION/PREPARATION ASSY	LA
			1	47E220753G1	9	PULSE HEIGHT ANALYZER MODULE	
			1	47E220769G1	8	MICROBIOLOGICAL/DIRECT OBSERVATION MODULE	
			1	47E220717G1	7	RADIATION DETECTOR MODULE	
			1	47E220751G1	6	PARTICLE DETECTOR MODULE	
			1	47D220750G1	5	GAS ANALYZER MODULE	
			1	47E220756G1	4	ELEMENT ANALYZER MODULE	
			1	47E220757G1	3	BIOCHEMICAL ANALYZER MODULE	LA
			1	47E220699P2	2	CONSOLE STRUCTURE	
			X	47E220696G1	1	ASSEMBLY	

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF ✓

SIGNATURES		DAY	MO	YR
DRAWN	[illegible]	21	10	70
CHECKED	J. Reff	21	11	70
ENGR APPROV	R. E. Zeller	21	11	70
ENGRG	[illegible]	21	11	70
MFG	[illegible]	20	11	70
MATERIAL	R. J. Gerlach	23	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT. LOC. FWILA., PA.

CONSOLE ASSEMBLY, LABORATORY ANALYSIS

IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER 47E220699

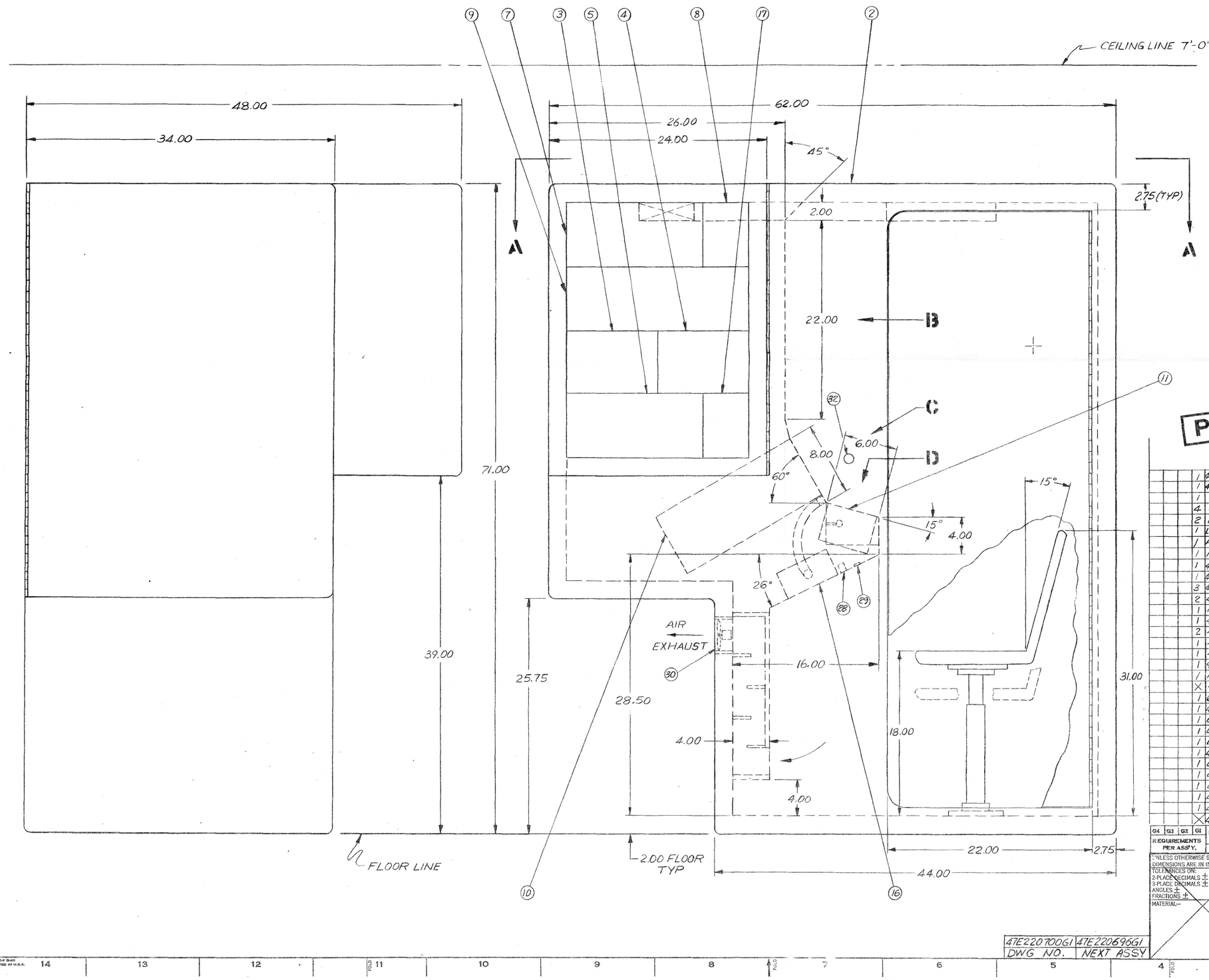
SCALE 1/4 SHEET 1 OF 1

47E220699G1	47E220696G1
DWG NO.	NEXT ASSY

ER 47E220699 REV E

ER 47E220699 REV E

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



NOTES:
1. ALL OUTSIDE CORNERS .75R

A. MONSANTO, ESP., CUPERTINO, CALIF.
B. BECKMAN INSTITUTE, INC., FULLERTON, CALIF.
C. HONEYWELL RADIATION INC., LEXINGTON, MASS.
D. OAKTRON INDUSTRIES, MONROE, WIS. SIMILAR TO MODEL 23A8C.
E. BENDIX ELECTRICAL COMP. DIV., SIDNEY, N.Y.
F. SETRA SYSTEMS, NATICK, MASS.
G. YELLOW SPRINGS INST., CO., YELLOW SPRINGS, OHIO
H. ROTRON, INC., WOODSTOCK, N.Y.
I. GENERAL ELECTRIC CO., SPACE DIV., VALLEY FORGE, PA. SIMILAR TO B3 SCREEN TYPE DESIGN.

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

	1	47E220700P32	32	RESPIRATORY MEAS. FEED THROUGH	
	1	47E220700P31	31	FLOWMETER, RESPIRATORY	I
	1	TN3B2	30	FAN, VENTILATION	H
	4	4204	29	THERMISTOR	G
	2	230BD	28	TRANSDUCER, PRESSURE	F
	1	UTO7RE-3-6PM	27	MOUNTING BRACKET & CONNECTOR FOR FLOWMETER	E
	1	ATC222840P	26	CRT, REAR PORT	
	1	M4050	25	DIGITAL CLOCK	B
	1	47C220764	24	CAMERA, TV	
	1	47E220700P23	23	SPEAKER MICROPHONE	D
	3	47E220700P22	22	JACK	
	2	47E220700P21	21	TOGGLE SW, VISION TEST RESPONSE	
	1	47E220700P20	20	TRACKING STICK	
	1	47E220700P19	19	TOGGLE SW (START/RESET) FOR TRACKING	
	2	47E220700P18	18	REACTION KEY	NOTE X
	1	47E222838G1	17	OCULOMETER MODULE	C
	1	47E222838P15	16	OCULOMETER, REMOTE	
	1	47E220700P15	15	REACTION TIMED READY LIGHT	
	1	MV50	14	REACTION LIGHTS	A
	X	47E220706	13	ISOLATION MODULE SIGNAL FLOW DIAG	
	1	63F901316G1	12	REMOTE DATA CONTROL UNIT	
	1	47D222820P2	11	KEYBOARD	
	1	47E222821G2	10	STANDARD MEASUREMENT DISPLAY, INT	
	1	47E222821G1	9	STANDARD MEASUREMENT DISPLAY, EXT	
	1	47D222820G1	8	COGNITIVE FUNCTION MODULE	
	1	47E222823G1	7	TRACKING & REACTION TIME MODULE	
	1	47E220736G3	6	VISION TESTER	
	1	47E220730G1	5	AUDIOMETRY MODULE	
	1	47E220736G1	4	VISION TEST MODULE	
	1	47E222842G1	3	ISOLATION MODULE CONTROLLER	
	1	47E220700P2	2	CONSOLE STRUCTURE	
	X	47E220700G1	1	ASSEMBLY	

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION
REQUIREMENTS PER ASSY.						LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	22	10	70
CHECKED			
RELEASED	21	11	70
ENGR			
MFG	20	11	70
QUALITY	19	11	70
PROJ. LDR.	18	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT. LOC PHILA., PA.

CONSOLE ASSEMBLY, CONTROLLED ENVIRONMENT IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220700

SCALE 1/4 SHEET 1 OF 2

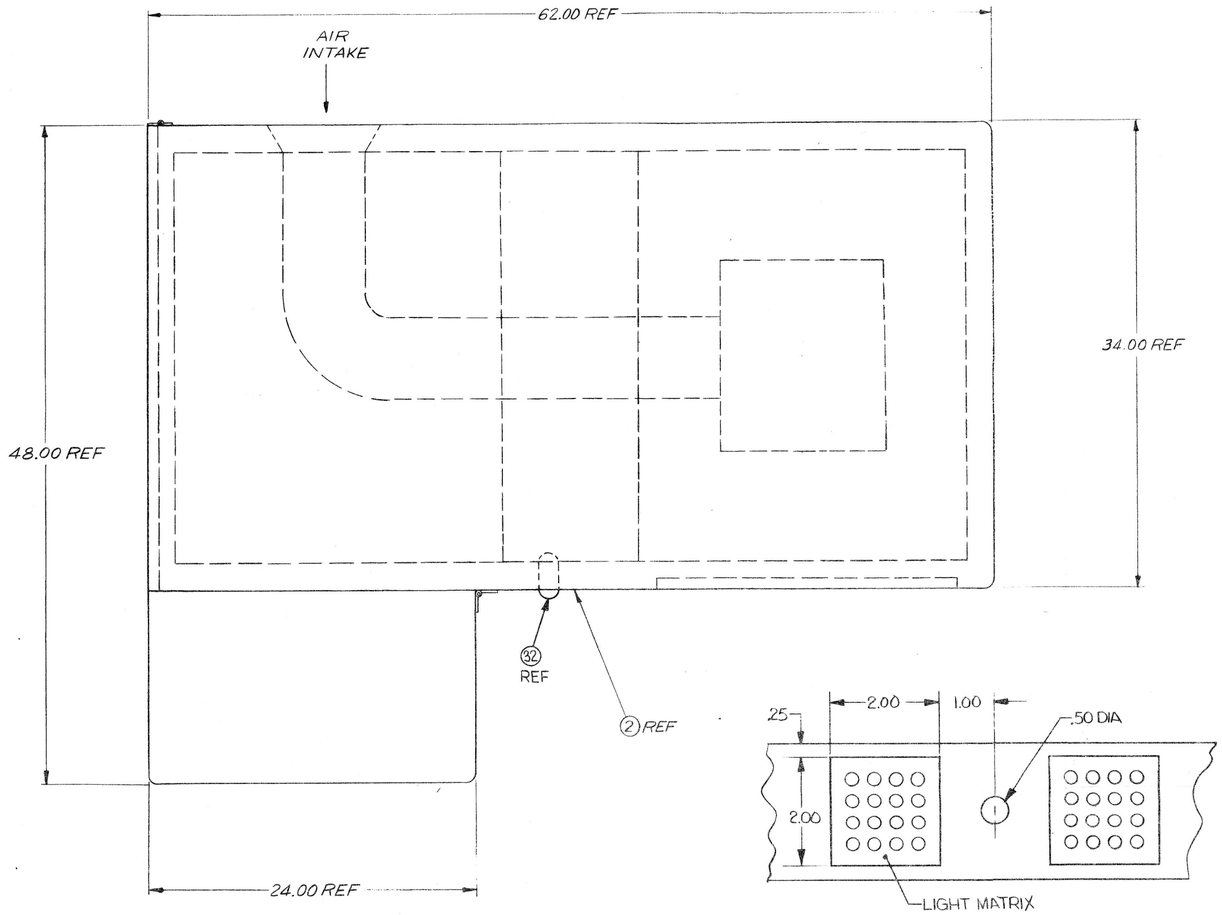
47E220700G1	47E220696G1
DWG NO.	NEXT ASSY

REV E ER47E220700

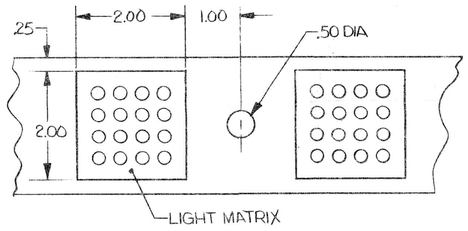
REV E ER47E220700

PRINTED IN U.S.A.

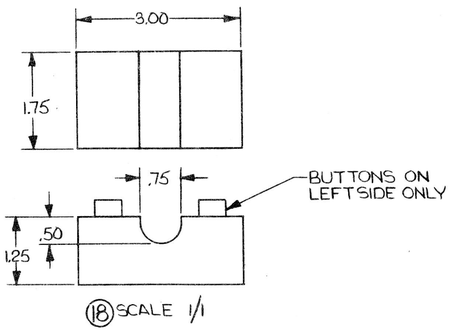
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



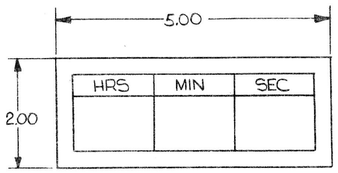
VIEW A-A



DETAIL E
SCALE 1/1



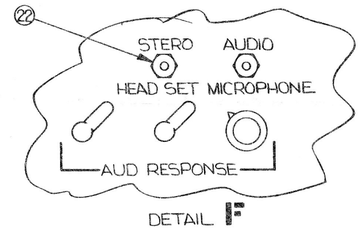
(18) SCALE 1/1



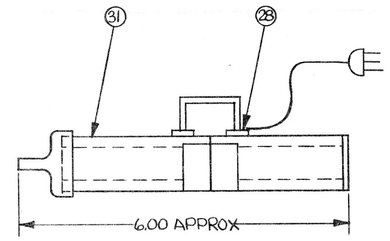
(25) SCALE 1/1

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

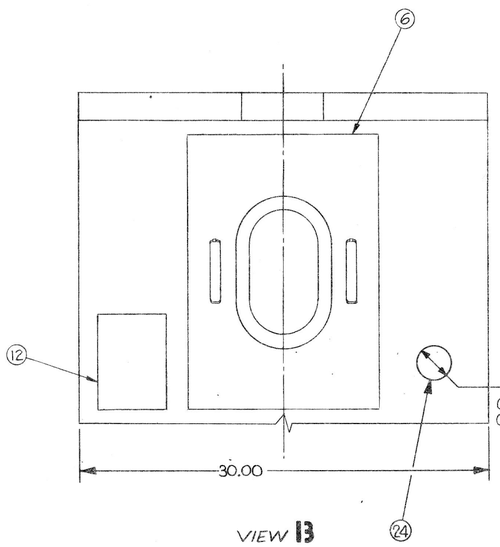
70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
70SD5251	PHTS EQUIP. s/s SPEC
70SD5254	BEH EQUIP s/s SPEC
70SD5213	VISION TEST MODULE SPEC.
70SD5214	AUDOMETRY MODULE SPEC.
70SD5397	OCULOMOTOR MODULE SPEC.
70SD5332	TRACKING REACTION TIME MODULE SPEC.
70SD5330	COGNITIVE FUNCTION MODULE SPEC.
70SD5339	ISOLATION MODULE SPEC.



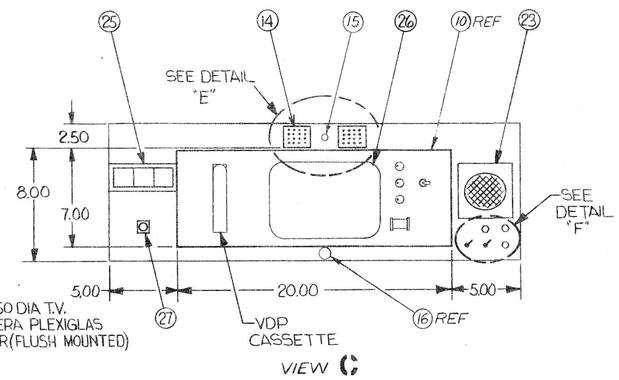
DETAIL F
SCALE 1/1



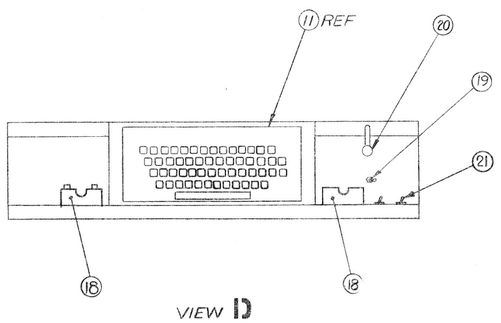
FLOWMETER ASSY



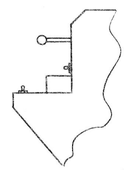
VIEW B



VIEW C



VIEW D



PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN Al Cannavaro	5	11	70
CHECKED			
RELEASED PE&E	24	11	70
ENGRG			
PROJ Marchetta	20	11	70
MANAGER R.J. Bayless	19	11	70
QA	14	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DIV. KING OF PRUSSIA, PA.

CONSOLE ASSEMBLY CONTROLLED ENVIRONMENT IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220700

SCALE 1/4 SHEET 2

DIST TO

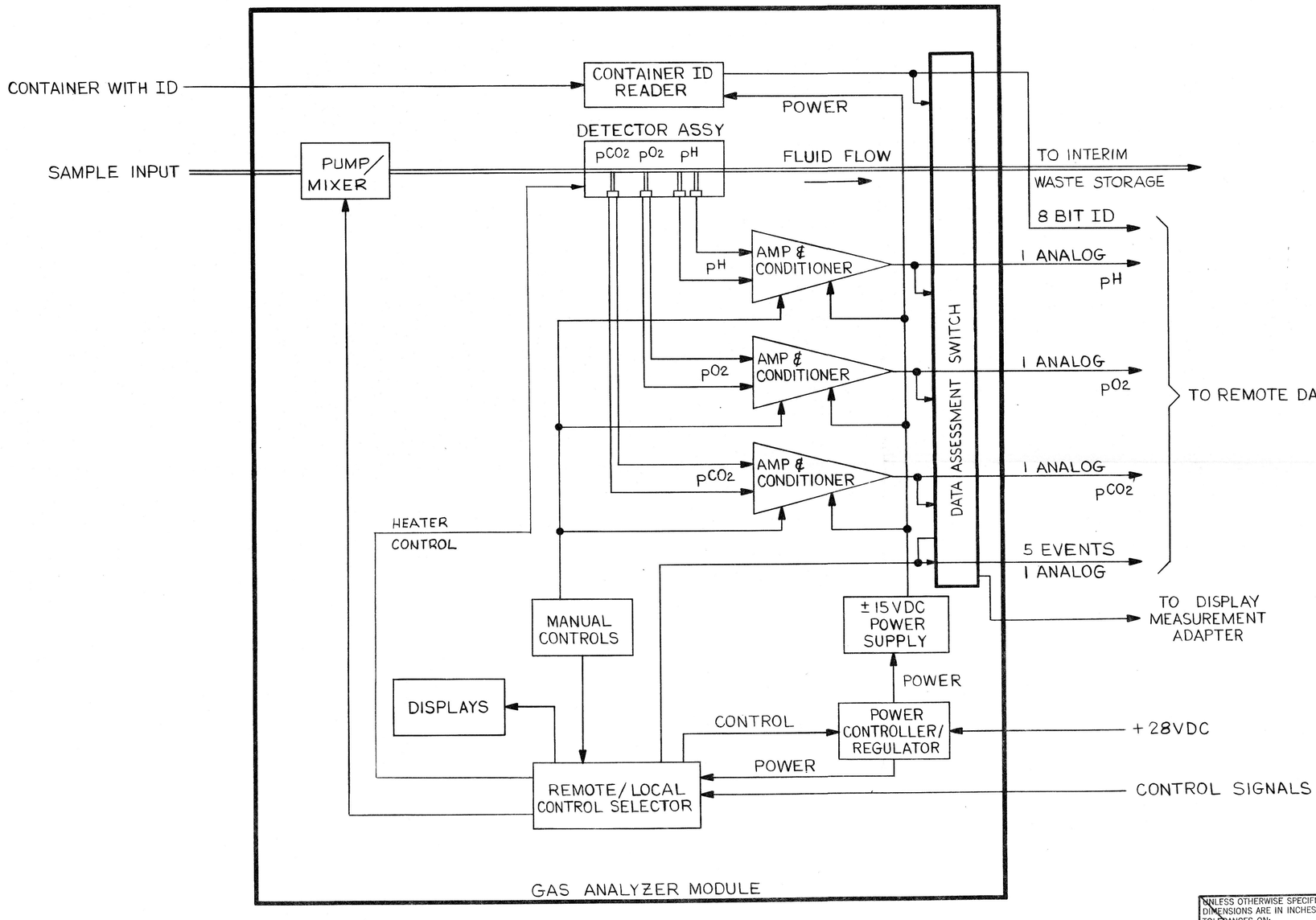
SIZE E ER47E220700 REV

SIZE E ER47E220700 REV

FOLD

PN 868-27 10-68 PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN D. A. Moran	28	9	70
CHECKED	30	9	70
RELEASED	10	11	70
ENGR	30	9	70
	30	9	70
ANGLES	1	10	70
	1	10	70
	1	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC. PHILA. PA.

DIAGRAM - SIGNAL FLOW
GAS ANALYZER MODULE
LA S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D220703

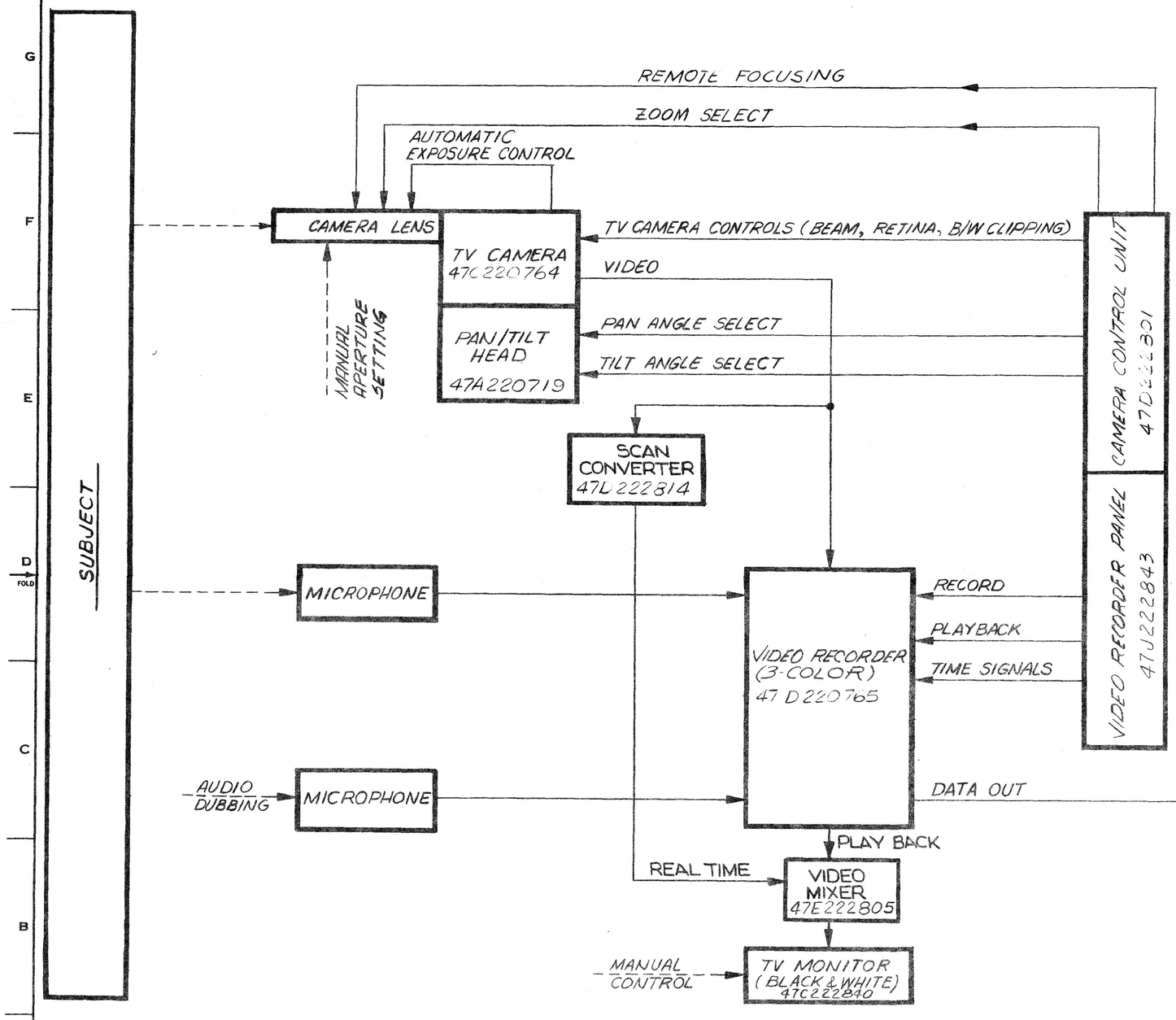
SCALE NK SHEET 1 OF 1

47D220703	47E220750G1
DWG. NO.	NEXT ASSY

SIZE D ER47D220703 REV

FN-604-F (3-68) PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5254	BEHAVORIAL EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5389	BEHAVORIAL EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70SD5333	BODY COORDINATION MODULE SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s). 2.4.2 BODY COORD, 2.6.1 TIME & MOTION
70 SD 5243	SAFETY DESIGN REQUIREMENTS
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS

NOTES:
1. ALL EQUIPMENT PART OF CAD S/S

PRELIMINARY

47D220704	47E220696 G1
DWG NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN Lou Reimer	8	9	70
CHECKED M. Miller	21	9	70
RELEASED Pete	16	11	70
ENGRG A. Wilkinson	23	9	70
Fredk. T. [illegible]	2	10	70
R. D. Gi (NHI)	2	11	70
DN Nitzl	2	10	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT. LOC PHILA., PA.

DIAG SIGNAL FLOW
BODY COORDINATION MODULE BE 3/5
IMBLM3 B4

SIZE	CODE IDENT NO.	
D	23991	ER47D220704

SCALE 4th | SHEET 1 OF 1

PN-096-P (1-69) PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

ESOPHOGEAL PRESSURE SENSOR

SIGNAL CONDITIONER (REF)

ESOPHOGEAL BALLOON

SUBJECT

SEE NOTE #2

COMPUTATION / CONTROL (REF)

INSPIRATION SPIROMETER

TEMP GAGE

DISCONNECT (TYP)

(SOL-1) N.O.

(LOCATION #1) MOUTHPIECE

AMBIENT AIR

FLOW ADAPTER

CAPPED FOR REBREATHING MEASUREMENTS

MASS SPEC CALIBRATION GASES

TEMP GAGE

(SOL-3)

HIGH PRESSURE GAS

DRYER

EXPIRATION SPIROMETER

TO AMBIENT

MV-1

(SOL-2) N.O.

(SOL-6)

COMPRESSION MECHANISM

REBREATHER BAG

TEMP GAGE

(SOL-4)

MV-2

ALTERNATE MOUTHPIECE LOCATION

REMOVABLE RELIEF VALVE, RV-1

RESPIRATORY/MANUAL VALVE ASSY (TYP)

MASS ANALYZER

ION PUMP

CALIBRATED LEAK

MV-3

SPACE VACUUM

MASS ANALYZER INLET SWITCHING VALVE (SOL-5)

RESPIRATORY GAS SUPPLIES

PRELIMINARY

NOTES:

1. SPIROMETERS SIMILAR TO NASA DRAWINGS 20M32600 & 20M32601 (MI71 EXP SKYLAB)
2. ALL RESPIRATORY FLOW ARE 1 1/4" I.D. NOMINAL, SHOW BY [illegible]
3. RESPIRATORY FLOW SWITCHING VALVES PER NASA SKYLAB MI71 EXPERIMENT DRAWINGS (PART NOS. 20M32258-1, 20M32257-1, &-3, 20M32038, 20M32293)
4. MASS SPECTROMETER FROM PERKIN-ELMER CO.
5. RESPIRATORY GAS FROM NATIONAL CYLINDER GAS CORP.
6. GE REFERENCE DWGS FOR RESPIRATORY MODULE:
   47E220698 - ASSEMBY IN CONSOLE
   47E220740 - FRONT PANEL
   47E220767 - SYGNAL FLOW

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5318	RESPIRATORY MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

47D220705	47E220740G1
DWG NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES		DAY	MO	YR
DRAWN	Rw Kimes	9	9	70
CHECKED	M Shell	7	10	70
RELEASED	D.C. PCQA	10	11	70
ENGRG.	L. Pugliese	8	10	70
MFG	P Manchette	8	10	70
PROJ	W F Tolmon	8	10	70
	P.J. DeBenedictis	8	10	70
	Not Applicable	8	10	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT. LOC PHILA., PA.

DIAG SCHEMATIC MECHANICAL
RESPIRATORY MODULE
PE 5/S
IMBLMS B4

SIZE D | CODE IDENT NO. 23991 | ER47D220705 | REV

SCALE NW | SHEET 1 OF 1 | DIST NO

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

CONTROLLER ASSEMBLY

VOICE OPERATE XMIT

AMP

INPUT HEADSET JACK

SELECTOR SWITCH

SPEAKER / MIKE

OPERATOR

CHAMBER ASSEMBLY

SPEAKER/MIKE

TV CAMERA

TV CAMERA CONTROLS

LIGHTS

LIGHT CONTROL

POWER

BLOWER

BLOWER CONTROL

CLOCK CONTROL

DIGITAL CLOCK

CHAMBER PRESSURE CALIBRATION PUMP

CALIBRATION PUMP SELECT SWITCH

BEHAVIORAL MEASUREMENT MODULES

VISION TESTER AUDIOMETRY

EXTERNAL BEHAVIORAL & PHYSIOLOGICAL MEASUREMENT MODULES

PHYSIOLOGICAL MEASUREMENT MODULES

TRACKING / REACTION TIMER
COGNITIVE FUNTION
MOTOR ABILITIES

SUBJECT

VOLTAGE REGULATOR

REMOTE/LOCAL SELECT SWITCH

CONTROL

CALIBRATION
VOLTAGE | RESISTORS

POWER SWITCH

DC-DC CONVERTER

+28VDC FROM EP&SD

SENSOR ASSEMBLY

TEMPERATURE SENSOR

THERMISTER BRIDGE

AMP

TO RDCU

DATA ASSESSMENT SWITCH

TEST POINT

TO DISPLAY MEASUREMENT ADAPTER

RUN-RESET HOLD SWITCH

INPUT SELECTOR

CHAMBER PRESSURE SENSOR

AMP

TO RDCU

CONTROL

FLOWMETER PRESSURE SENSOR

INT

AMP

TO RDCU

AMP

TO RDCU

ENVIRONMENTAL NOISE

MICROPHONE

FUNCTION SELECT SWITCH

BAND PASS FILTERS

ATTENUATION SELECT SWITCH

AMP

METER DISPLAY

SE S/S SOUND MONITORING ASSEMBLY

METER DISPLAY
FAST | SLOW

CALIBRATE

ACOUSTICAL BARRIER

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	30	10	70
CHECKED	4	11	70
ENGR LDC	12	11	70
ENGR David B Wright	4	11	70
	9	11	70
	9	11	70
	11	11	70
	11	11	70
	5	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

BLOCK DIAGRAM, FUNCTIONAL
ISOLATION MODULE
SE S/S IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220706

SCALE NONE SHEET 1 OF 1

47E220706	47E222842G1
DRAWING NO.	NEXT ASSY

ER47E220706 REV E

ER47E220706 REV E

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

SUBJECT

4 ELECTRODES + GND

PREAMPLIFIERS

INPUT NETWORK

7 ELECTRODES + GND

PREAMPLIFIERS

FRANK LEAD NETWORK

MICROPHONE

PCG/VbCG SIGNAL CONDITIONER

4 ELECTRODES

ZCG SIGNAL CONDITIONER

SIGNAL CONDITIONER SUB ASSY

STIMULATION

ECG SIGNAL CONDITIONER ×6

VCG SIGNAL CONDITIONER ×2

FILTER 0.1 TO 20 Hz

FILTER 10 TO 30 Hz

FILTER 30 TO 500 Hz

POST AMPL

SWITCH

ECT

CONTROL & CALIBRATION

POWER SUPPLY

SAMPLE & HOLD SWITCH

dz/dt CIRCUIT

SAFETY RESET SWITCH

SAFETY CIRCUITS

INPUTS FROM EACH CHANNEL OF SIGNAL CONDITIONER SUB-ASSEMBLY

TO SAFETY STATUS INDICATORS

CONTOL SUB ASSY

LOCAL/REMOTE SWITCH

TEST POINT

DATA ASSESSMENT DISPLAY SWITCH

STANDARD MEASUREMENT DISPLAY MODULE

CHEST

LEAD I

LEAD II

LEAD III

AVR

AVL

AVF

Vx

HEART RATE

Vy

Vz

PCG/VbCG 0.1-20 Hz

REMOTE CAL & CONTROL LINE

PCG/VbCG 10-30 Hz

PCG/VbCG 30-500 Hz

POWER +28 V

PCG/VbCG 0.1-1000 Hz

REMOTE SAFETY STATUS

Zo

ΔZ

dz/dt

REMOTE DATA CONTROL UNIT

TO REMOTE DATA CONTROL UNIT

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN Dickerman	15	9	70
CHECKED [illegible]	22	9	70
ENGR APPROVED [illegible]	12	11	14
MFG APPROVED [illegible]	22	9	70
QUALITY APPROVED			

GENERAL ELECTRIC
SPACE SYSTEMS DIV. LOC PHILA., PA.

DIAGRAM, SIGNAL FLOW CARDIOVASCULAR MODULE PE SIS IMB LMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220713

SCALE FULL | SHEET 1 OF 1

47E220713 DWG NO. | 47E220726G1 NEXT ASSY

PRINTED IN U.S.A.

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED

TO DATA TRANSPONDER

VCG CALIBRATION LOGIC INPUT SIGNAL

ACCELERATION CALIBRATION LOGIC (2) SIGNAL INPUTS PER CHANNEL $\ddot{\theta}_z$ $\ddot{\theta}_y$ $\ddot{\theta}_x$ $\ddot{Z}$ $\ddot{Y}$ $\ddot{X}$

OPERATIONAL AMPLIFIER CALIBRATION LOGIC (3) SIGNAL INPUTS PER CHANNEL $\ddot{\theta}_z$ $\ddot{\theta}_y$ $\ddot{\theta}_x$ $\ddot{Z}$ $\ddot{Y}$ $\ddot{X}$

VCG OUTPUT X Y Z

SIGNAL OUTPUT $\ddot{X}$ $\ddot{Y}$ $\ddot{Z}$ $\ddot{\theta}_x$ $\ddot{\theta}_y$ $\ddot{\theta}_z$

RESPIRATION SIGNAL OUTPUT

POWER

$\ddot{X}$ ACCLRM
$\ddot{Y}$ ACCLRM
$\ddot{Z}$ ACCLRM
$\ddot{\theta}_x$ ACCLRM
$\ddot{\theta}_y$ ACCLRM
$\ddot{\theta}_z$ ACCLRM

$\ddot{X}$ AMPL
$\ddot{Y}$ AMPL
$\ddot{Z}$ AMPL
$\ddot{\theta}_x$ AMPL
$\ddot{\theta}_y$ AMPL
$\ddot{\theta}_z$ AMPL

SUBJECT

PREAMPLIFIERS – VCG

SUBJECT MOUNTED ELECTRODES

FRANK LEAD NETWORK

X VCG AMPL
Y VCG AMPL
Z VCG AMPL

RESPIRATION SENSOR

T

+V

-V

MEASUREMENT & SIGNAL CONDITIONING UNIT

OPERATOR CONTROL & MONITORING UNIT

GAIN ADJUST

SIGNAL OUTPUT TO REMOTE DATA CONTROL UNIT

OPNL AMPL CAL LOGIC SWITCHES

ACCEL CAL LOGIC SWITCHES

VCG CAL LOGIC SWITCHES

DATA ASSESSMENT SWITCH

STANDARD MEASUREMENT DISPLAY MODULE

REMOTE CONTROLS FROM DATA ACQUISITION & DISTRIBUTION S/S

VCG OUTPUT

REMOTE DATA CONTROL UNIT

RESPIRATION

DC – DC POWER CONDITIONING

REGULATED VOLTAGES

+28 VDC

PRELIMINARY

CAL LOGIC SIG FROM OPR CONT & MON UNIT OR BIOTELEMETRY UNIT

+CAL +V -V -CAL

ACCEL CAL

VCG CAL

BCG CAL

PROOF MASS

P.O.

SERVO AMPL

7.5
15 GAIN SELECT LOGIC SIG FROM OPR CONT & MON UNIT
25

TYPICAL OPERATIONAL AMPLIFIER CIRCUIT

TO OPR CONT & MON UNIT WITH FLEX CABLE

TLM COND FOR 0 TO 5VDC F.S. OUTPUT

TO CONSTRAINT PLATFORM DATATRANSPONDER UNIT

AMPL CAL LOGIC OPR/CAL SIG LOGIC "1" ACCEL/AMPL SIG LOGIC "1"

OPR AMPL WITH GAIN ADJ FOR ±2.5VDC OUTPUT FOR ± FULL SCALE ACCEL

47E220714	47E220721G1
DWG NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—

ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	18	9	70
CHECKED	23	9	70
ENGR APPD	12	11	70
ENGR APPD	14	9	70
MFG			
	1	10	70
	1	10	70

GENERAL ELECTRIC SPACE SYSTEMS LOC PHILA., PA

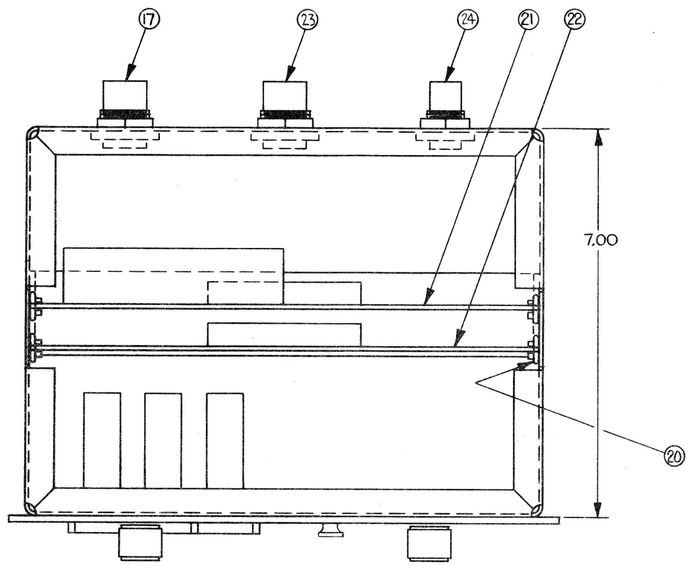
DIAGRAM SIGNAL FLOW BALLISTOCARDIOGRAM MODULE PE S/S IMBLMS B4

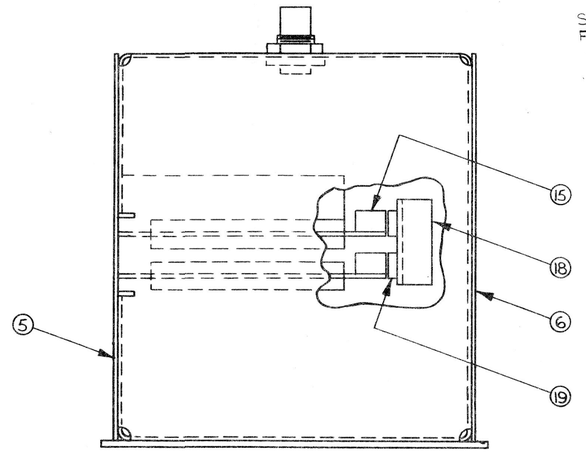
SIZE	CODE IDENT NO.	
E	23991	ER47E220714

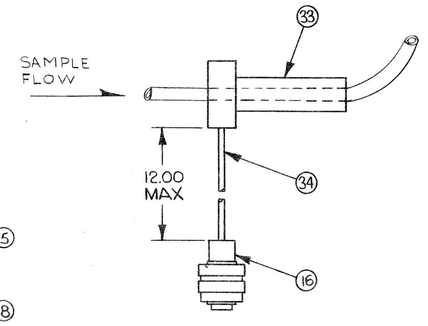
SCALE — SHEET 1 OF 1

REV E ER47E220714

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





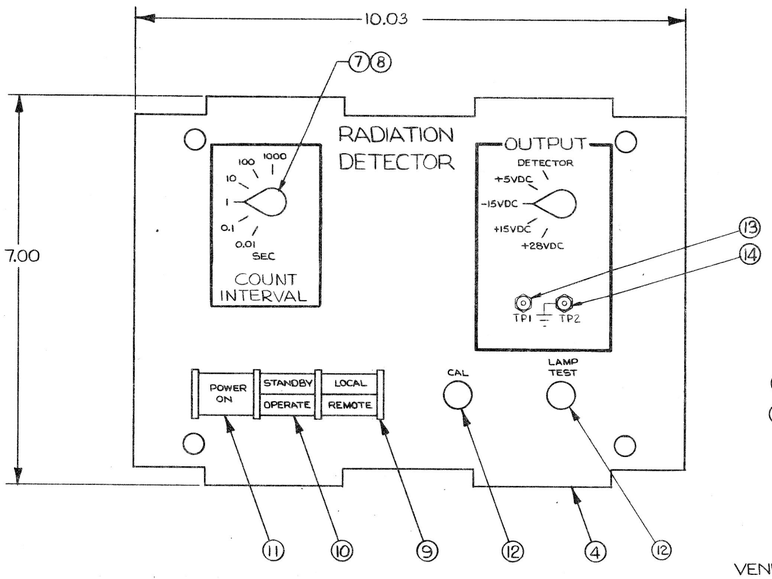


G3

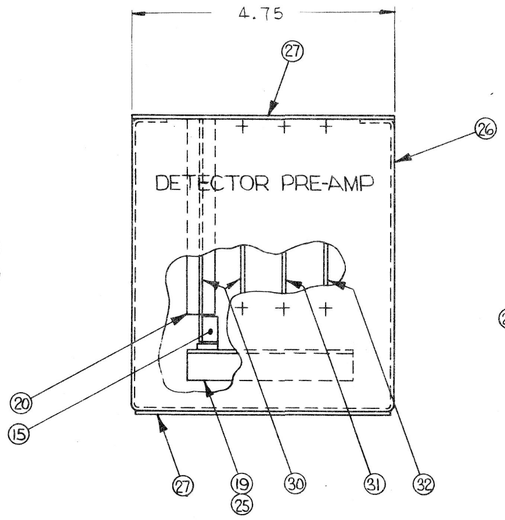
PRELIMINARY

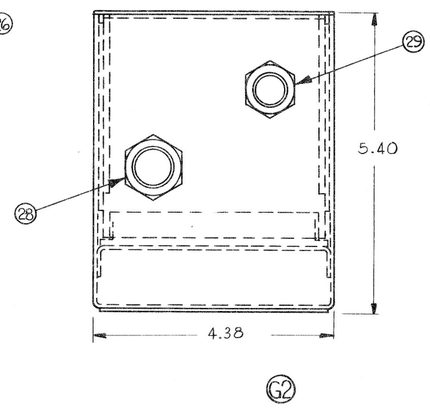
REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES



G1





G2

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5252	LABORATORY ANALYSIS SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5390	LABORATORY ANALYSIS SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5345	RADIATION DETECTOR MODULE SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(S). 3.2.4.1.4 - -
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

VENDOR NOTES
- A. OAK MFG CO. CRYSTAL LAKE, ILL
- B. MASTER SPECIALTIES CO COSTA MESA, CALIF
- C. CONTROLS CO OF AMERICA FOLCROFT, PA
- D. AMP CORP HARRISBURG, PA
- E. THE BIRTCHER CORP MONTEREY PARK, CALIF
- F. BENDIX ELECTRICAL COMPONENT DIV SIDNEY, NEW YORK

NOTES
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E220717 (GROUP OR PART NUMBER AS APPLICABLE) PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

G. GENERAL ELECTRIC CO. SPACE DIVISION SPACE TECHNOLOGY PRODUCTS OPERATION PHILA, PA (SIMILAR TO MK III DETECTOR)

47E220717G3	47E222812 G3
47E220717G2	47E222812 G3
47E220717G1	47E220699G1
PART NO.	NEXT ASSY

G5	G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	
REQUIREMENTS PER ASSY					LIST OF MATERIAL			
			X		47D220690	35	DIAGRAM, SIGNAL FLOW	
		1			47E220717P34	34	CABLE	
		1			47E220717P33	33	DETECTOR, SILICON AVALANCHE	G
			1		47E220717P32	32	DETECTOR PRE-AMPLIFIER CIRCUIT	
			1		47E220717P31	31	SELF TEST PULSE GEN CIRCUIT	
			2		47E220717P30	30	POWER SUPPLY CIRCUIT	
			1		LJT07RE-9-44S	29	CONNECTOR	F
			1		LJT07RE-11-13P	28	CONNECTOR	F
			2		47E220717P27	27	COVER	
			1		47E220717P26	26	ENCLOSURE	
			1		47E220717P25	25	BASE	
				1	LJT07RE-9-6P	24	CONNECTOR	
				1	LJT07RE-11-13S	23	CONNECTOR	
				1	47E220717P22	22	GATE & OUTPUT AMPLIFIER CIRCUITS	
				1	47E220717P21	21	POWER SUPPLY & TIMER CIRCUITS	
			8	4	17B-7-1	20	RETAINER, PCB	E
			4	2	202932-1	19	CONNECTOR, 71 PIN	D
				1	47E220717P18	18	BASE	
				1	LJT07RE-11-13P	17	CONNECTOR	
		1			LJT06RE-9-44P	16	CONNECTOR	
			4	2	202933-1	15	CONNECTOR, 71 PIN	D
				1	MS16108-3A	14	JACK, TEST BLACK	
				1	MS16108-8A	13	JACK, TEST YELLOW	
				2	W9601-B	12	SWITCH, PUSH BUTTON	C
				1	90EA1G4F3JIWLIN1	11	SWITCH, ILLUMINATED PUSHBUTTON	B
				2	90EA1G4F3J2WL2N1	10	SWITCH, ILLUMINATED PUSH BUTTON	B
				4	90E505	9	BARRIER	B
				2	399223A	8	SWITCH, ROTARY	A
				2	MS91528-0K1B	7	KNOB	
				1	47E222826G13	6	COVER, BOTTOM	
				1	47E222826G9	5	COVER, TOP	
				1	47E222826G1	4	MODULE	
		X			47E220717G3	3	ASSEMBLY, SENSOR	
		X			47E220717G2	2	ASSEMBLY, PRE-AMP	
		X			47E220717G1	1	ASSEMBLY, CONTROL	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— 63 SURF.

SIGNATURES	DAY	MO	YR
DRAWN	9	10	70
CHECKED	29	10	70
ENGR APPD	14	11	70
MFG APPD	4	11	70
PROJ MGR	3	11	70
CONTR ADMIN	3	11	70
	2	11	70
	2	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA

MODULE ASSEMBLY OF RADIATION DETECTOR LA S/S IMBLNS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220717

SCALE 1/1 | SHEET 1 OF 1 | DIST NO

ER47E220717 REV E

ER47E220717 REV E

PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

MANUAL START
SELECT CYCLE TIMER
SET PRESSURE LIMIT

SUBJECT

CUFF
PUMP
PUMP DRIVE
FLIP FLOP
RESET
CYCLE TIMER
RESET
COMPARATOR
REMOTE CONTROL LINE
SMDM
CUFF PRESSURE
Σ
PRESSURE TRANSDUCER
PRESSURE SIGNAL CONDITIONER
SAMPLE & HOLD
Δ COMPARATOR
SAMPLE & HOLD
DATA ASSESSMENT SWITCH
SYSTOLIC
VALVE 1 20 MM HG/SEC
VALVE DRIVER
RESET
FLIP FLOP
FLIP FLOP
RESET
TP
VALVE 2 2MM HG/SEC
VALVE DRIVER
VALVE 3 DUMP
VALVE DRIVER
RDCU
DIASTOLIC
SAMPLE & HOLD
SYSTOLIC FILTER
COMPARATOR
FLIP FLOP
RESET
SAMPLE & HOLD
Δ COMPARATOR
FLIP FLOP
RESET
MIKE
MIKE SIGNAL CONDITIONER
DIASTOLIC FILTER
COMPARATOR
FLIP FLOP
RESET
FLIP FLOP
RESET
FLIP FLOP
RESET
COMPARATOR
DELAY
FLIP FLOP
TO OTHER CKTS
VENOUS PRESSURE
ECG GATE SWITCH +5V
VENOUS PRESSURE TRANSDUCER
VENOUS PRESSURE SIG CONDITIONER
CALIBRATION CONTROL
DC - DC CONVERTOR
POWER
ECG SIGNAL CONDITIONER
POST AMPLIFIER
ECG
RDCU
PREAMPLIFIERS
ELECTRODES

PRELIMINARY

47E220718	47E220731G2
47E220718	47E220731G1
DWG NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	21	9	70
CHECKED	23	9	70
ENGR RELEASED	11	11	70
MFG	3	11	70
QUAL	2	11	70
PROJ ENGR	3	11	70
CONTR MGR	3	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DIV LOC PHILA., PA.

DIAGRAM, SIGNAL FLOW
BLOOD PRESSURE MODULE
PE S/S
IMBLMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220718 | REV E

SCALE ¾ | SHEET 1 OF 1

ER47E220718 REV E
ER47E220718 REV E

SIZE		SHEET	REV
A	ER47A220719	1 OF 1	

REVISIONS

LTR	DESCRIPTION	DATE	APPROVED

SOURCE: RADIO CORP. OF AMERICA, CAMDEN, N. J.

GE PART NUMBER	PART DESCRIPTION	MANUFACTURER'S PART NUMBER
P1	TV CAMERA LIGHT DUTY REMOTE CONTROL PAN & TILT UNIT.	PT-155S

PACKAGING - THE FOLLOWING SHALL APPEAR ON ALL PACKAGES: GE DRAWING AND PART NUMBER MANUFACTURER'S NAME & PART NUMBER.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258 CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.

PRELIMINARY

47A220719P1	47E220696G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON:
FRACTIONS ± DECIMALS ± ANGLES ±
ALL SURFACES ✓
MATL–

SIGNATURES	DAY	MO	YR
DRAWN [illegible]	23	9	70
CHECKED [illegible]	24	9	70
ISSUED RELEASED	10	11	70
ENGRG [illegible]	24	9	70
[illegible]	1	10	70
[illegible]	1	10	70
R & D [illegible]	1	10	70

GENERAL ELECTRIC
SPACE SYSTEMS ~~DEPT~~ LOC PHILA., PA

PAN & TILT UNIT
CAD S/S IMBLMS B4

SIZE	CODE IDENT NO.	
A	23991	ER47A220719

SCALE ½ SHEET 1 OF 1

DIST TO

FN 901-F (5-67) PRINTED IN U.S.A.

SIZE		SHEET	REV
A	ER47A220720	1 OF 1	

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

SOURCE: SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO, TEXAS

GE PART NUMBER	PART DESCRIPTION	MANUFACTURER'S PART NUMBER
P1	BODY MASS MEASURING DEVICE ASSEMBLY	232001-01 & SK283741

PACKAGING - THE FOLLOWING SHALL APPEAR ON ALL PACKAGES: GE DRAWING AND PART NUMBER MANUFACTURER'S NAME & PART NUMBER

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

47A220720P1	47E220696G1
	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON:

FRACTIONS ± DECIMALS ± ANGLES ±

ALL SURFACES ✓

MATL—

SIGNATURES	DAY	MO	YR
DRAWN Ron Remer	23	9	70
CHECKED M. Hall	24	9	70
RELEASED pcfa	10	11	70
ENGRG	24	9	
	24	9	70
W F Anderson	1	10	70
R J Daugherty	1	10	70
	1	1	71

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA.

BODY MASS MEASURING DEVICE
SE S/S
IMBLMS B4

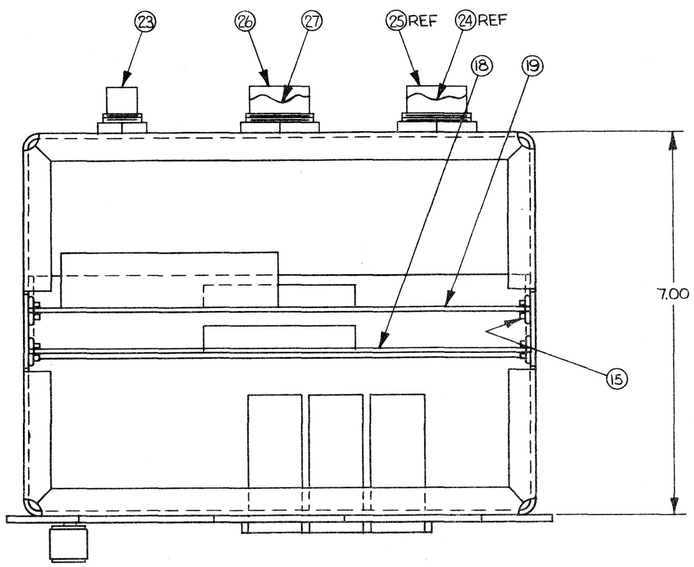
SIZE	CODE IDENT NO.	
A	23991	ER47A220720

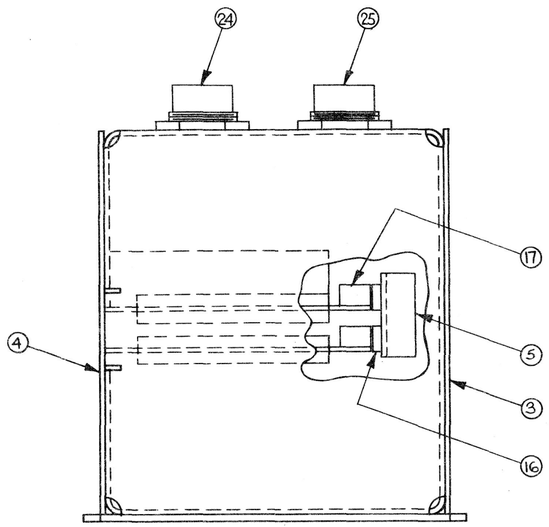
SCALE 1/4 | SHEET 1 OF 1

DIST TO

FN 901-F (5-67) PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

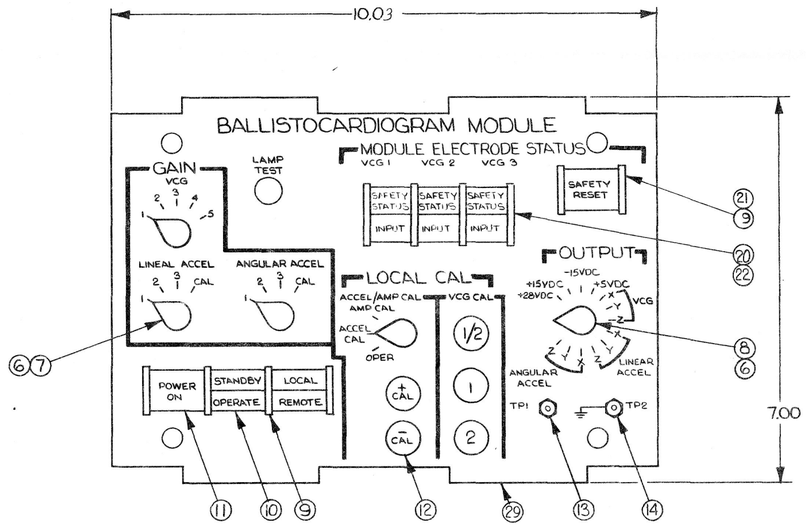


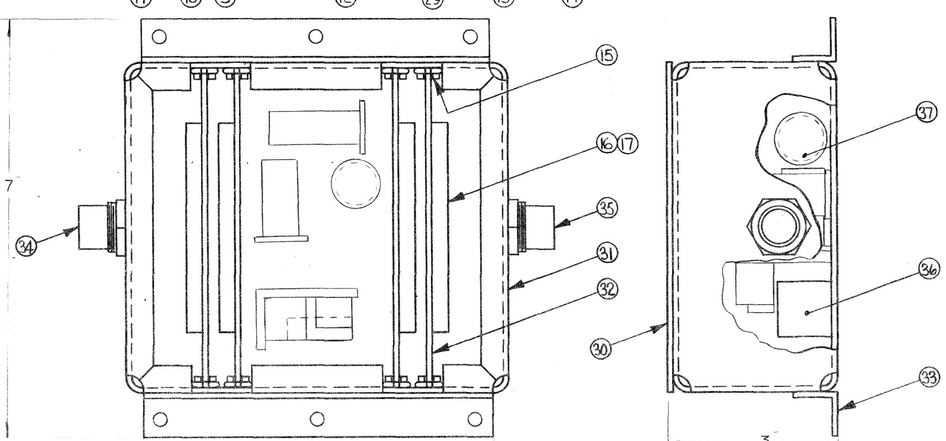


THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5317	BALLISTOCARDIAGRAM MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (S). 1.2.2 VCG & 1.2.10-BCG
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY





NOTES
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 11BA1664.
2. MARK GE47E220721 (GROUP OR PART NUMBER AS APPLICABLE) PER 11BA1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. SEE GE DWG 47E220696 FOR BALLISTOCARDIAGRAM RESTRAINT PLATFORM.

VENDOR NOTES
A. MASTER SPECIALTIES CO.
COSTA MESA, CALIF
B. CONTROLS CO OF AMERICA
FOLCROFT, PA
C. THE BIRTCHER CORP
MONTEREY PARK, CALIF
D. AMP CORP
HARRISBURG, PA
E. OAK MFG CO
CRYSTAL LAKE, ILL
F. BENDIX ELECTRICAL COMPONENT DIV
SIDNEY, NEW YORK
G. STATHAM INSTS.
LOS ANGELES, CALIF.

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
3				47E220721P37	37	ACCELEROMETER, ANGULAR	G
3				47E220721P36	36	ACCELEROMETER, LINEAR	G
1				LJT07RE-15-35S	35	CONNECTOR, 37 PIN	F
1				LJT07RE-15-35PA	34	CONNECTOR, 37 PIN	F
2				47E220721P33	33	ANGLE	
4				P32	32	PCB	
1				P31	31	ENCLOSURE	
1				47E220721P30	30	COVER, TOP	
1				47E222821G1	29	MODULE	
X	X			47E220714	28	DIAGRAM, SIGNAL FLOW	
	1			LJT07RE-17-35PC	27	CONNECTOR, 55 PIN	F
	1			-17-35PB	26	"	F
	1			-17-35PA	25	"	F
	1			-17-35P	24	55 PIN	F
	1			LJT07RE-9-6P	23	CONNECTOR, 6 PIN	F
	3			90EA1C4F3J3RWL3N1	22	SWITCH, ILLUMINATED, PUSHBUTTON	A
	1			90EA1C4F3J1RLIN1	21	SWITCH, ILLUMINATED, PUSHBUTTON	A
	4			90E501	20	BARRIER	A
	1			47E220721P19	19	DISPLAY & POWER SUPPLY CIRCUITS	
	1			47E220721P18	18	GAIN SELECT & CALIBRATION CIRCUITS	
4	2			202933-1	17	CONNECTOR, 77 PIN	D
4	2			583227-1	16	CONNECTOR, 77 PIN	D
8	4			17B-7-1	15	RETAINER, PCB	C
	1			MS16108-3A	14	JACK, TEST BLACK	
	1			MS16108-8A	13	JACK, TEST YELLOW	
	6			W9601-B	12	SWITCH, PUSH BUTTON	B
	1			90EA1C4F3J1WLIN1	11	SWITCH, ILLUMINATED, PUSHBUTTON	A
	2			90EA1C4F3J2WL2N1	10	SWITCH, ILLUMINATED, PUSHBUTTON	A
	6			90E505	9	BARRIER	A
	1			399659MF	8	SWITCH, ROTARY	E
	4			399223A	7	SWITCH, ROTARY	E
	5			MS91528-0K1B	6	KNOB	
	1			47E220721P5	5	BASE, CONNECTOR MOUNTING	
	1			47E222826G9	4	COVER, TOP	
	1			47E222826G13	3	COVER, BOTTOM	
X				47E220721G2	2	ASSEMBLY, MEAS SIG COND UNIT	
X				47E220721G1	1	ASSEMBLY, OPER CONT MON UNIT	

REQUIREMENTS PER ASSY

LIST OF MATERIAL

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47E220721G2	47E220696G1
47E220721G1	47E220698G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES °
FRACTIONS
MATERIAL—
ALL SURF.

SIGNATURES		DAY	MO	YR
DRAWN	[illegible]	14	10	70
CHECKED	[illegible]	20	10	70
ENGR APPROVED	RELEASED PER ECR	14	11	70
ENGRG				
MFG APPROVED	[illegible]	30	10	70
QUALITY				
PROJECT MGR				
CONTRACTOR				

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA
MODULE ASSEMBLY OF BALLISTOCARDIOGRAM PE S/S IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220721

SCALE 1/1 SHEET 1 OF 1

REV E ER47E220721

REV E ER47E220721

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

GENERAL PURPOSE A/N KEYBOARD INTERFACE
XMT BUTTONS
8 DATA LINES
STROBE
TRANSMIT CONTROL
d/dt
ETX RECOGNITION
STROBE
TIMING
OUTPUT DATA BUFFER
8 DATA LINES
RESET
CURSOR CONTROL
DATA TO D.A.M.
D.A.M. READY LINE
A/N CHAR STROBE
CONTROL CHARACTER RECOGNITION
SET LINES
A/N BUFFER STORAGE
COMPUTER CONTROL
MANUAL CONTROL
PAGE CONTROL MEMORY
MEMORY SCAN R/W LOGIC
A/N PAGE MEMORY 512 WORDS X 8 BITS
MEMORY SCAN R/W LOGIC
EVENT PAGE MEMORY 512 WORDS X 8 BITS
4 WORDS X 8 BITS EVENT STORAGE
CHARACTER GENERATOR
7 LINES
CONT
COLOR SEQUENCE RECOGNITION
VIDEO MODULATION
3 LINES
A/N PAGE
CONT
VIDEO SWITCH
PAGE SPLITTING LOGIC
CONT
VIDEO TO TV S/S
TV S/S
A/N PAGE, EVENT, BAR CHART
CLOCK
Z
HORIZONTAL POSITION TIMER
VERTICAL POSITION TIMER
SYNC GENERATOR
TV SYNC SIG (VERT & HORIZ)
7 LINES
CHARACTER GENERATOR
VIDEO MODULATION
EVENT PAGE INFORMATION
COLOR SEQUENCE RECOGNITION
D TO LENGTH COVERTER & MODULE
BAR CHART
BLANKING GENERATOR
DISPLAY
4 EVENT ADRS LINES
2 COLOR CODE LINES
BAR CHART MODE
ADAPTER
8 DATA LINES
8 METER ADRS LINES
MODULE
8 CHANNEL X 10 BIT MEMORY
MEMORY SCAN LOGIC
VERT POSN
COLOR CONT
DATA OUTPUT
DATA
LOAD
X-Y CONT
INHIBIT
CLOCK
POSN
VP TIMER
COLOR
CW TRACE SCAN CONV
VIDEO GEN
3 LINES
A
B
C
D
E
DATA ADRS
GAIN CONTROL MEMORY 8WORDS X 4BITS
GATING CONTROL
8 ADRS LINES
CW TRACE DATA BUFFER 8WORDS X 8 BITS
64 LINES
10 LINES
CW TRACE POSITION & COLOR BUFFER 8WORDS X 12BITS
72 LINES
24 LINES
8 ADRS LINES
INHIBIT COUNTER
CLOCK Z
HORIZONTAL TRACE COUNTER
CLOCK SELECT
RESET SET
9 LINES
COMPARE
9 LINES
LOAD
CONT
8 LINES X POSN
X-Y MODE CONTROL
1 ADRS LINE
INHIBIT EXT LOADING
÷ n
S
R
FRAME PULSE
R÷n
n
(n-1)
DECODE 512
TRIGGER COMPARISON
1 LINE ADRS
INHIBIT
TIME BASE SEL
KEYBOARD SPECIAL PURPOSE CONTROLS
INTL/EXT TRIGGER SEL
WRITE TIME SEL
TRIGGER LEVEL
VARIABLE ERASE TIME
A B C D E F G H 3 LINES
CW VIDEO OUTPUT COMBINING
3 LINES COLOR VIDEO
TO VIDEO MIXER
1 LINE BLACK & WHITE VIDEO

TYPICAL CW TRACE CONVERTER CIRCUIT

CW TRACE DATA BFR
8 LINES
GATING
8-500 BIT DYNAMIC SHIFT RGTR
X-Y MODE CONT
CLOCK
LOAD
STORE INHIBIT
8 LINES
FULL ADDER
CW TRACE VERT POSN BUFFER
9 LINES
9 LINES
COMPARE
9 LINES
VERT POSN TIMER
CW TRACE COLOR BFR
3 LINES
RED
BLUE
GRN
VIDEO OUTPUT

TYPICAL VIDEO GENERATOR CIRCUIT

CW TRACE SCAN CONV | VIDEO GEN
3 LINES
F
G
H

PRELIMINARY

47E220722	47E222809G1
DWG NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

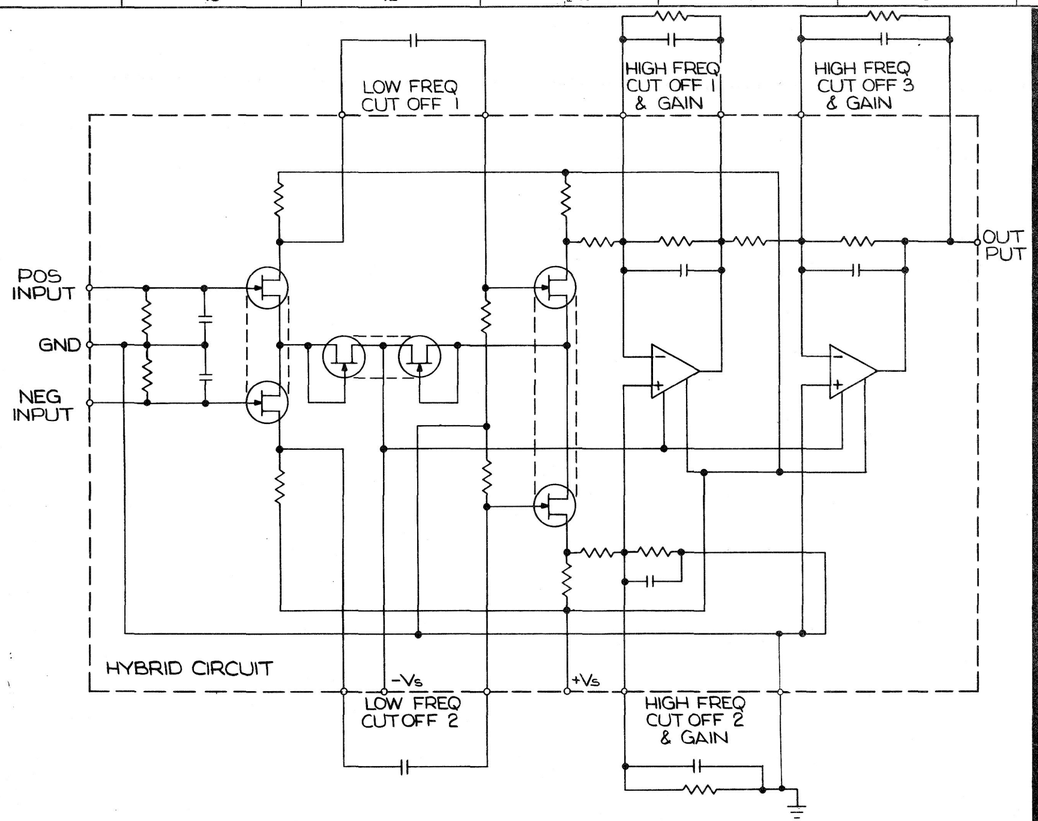
SIGNATURES	DAY	MO	YR
DRAWN	25	9	70
CHECKED	7	10	70
ISSUE	12	11	70
ENGRG	7	10	70
	2	11	70
	7	10	70

GENERAL ELECTRIC
SPACE SYSTEMS DIV LOC PHILA. PA.
DIAGRAM SIGNAL FLOW
COMBINED DISPLAY CONTROLLER
CAD S/S
IMBLMS B4

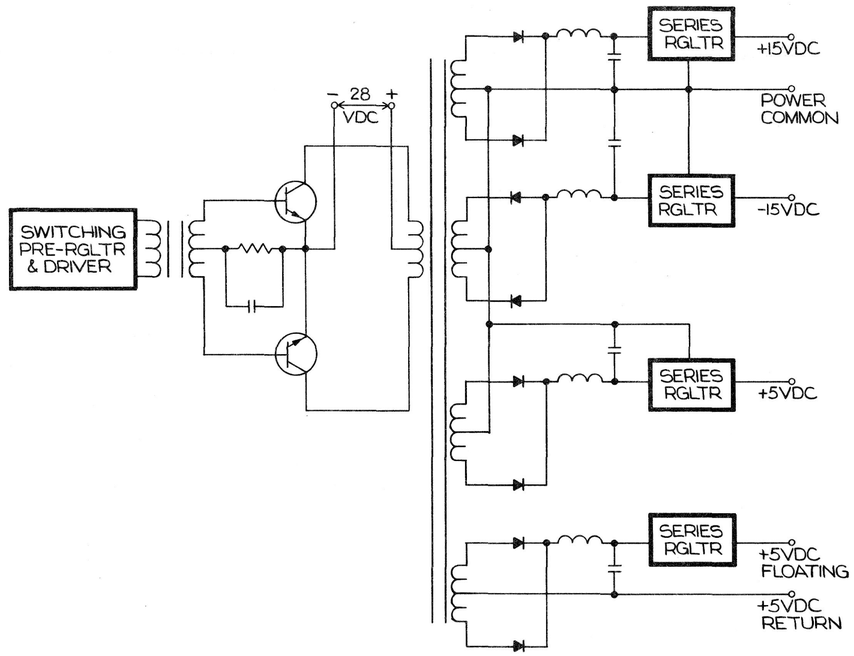
SIZE	CODE IDENT NO.	
E	23991	ER47E220722

SCALE 3/4 SHEET 1 OF 1

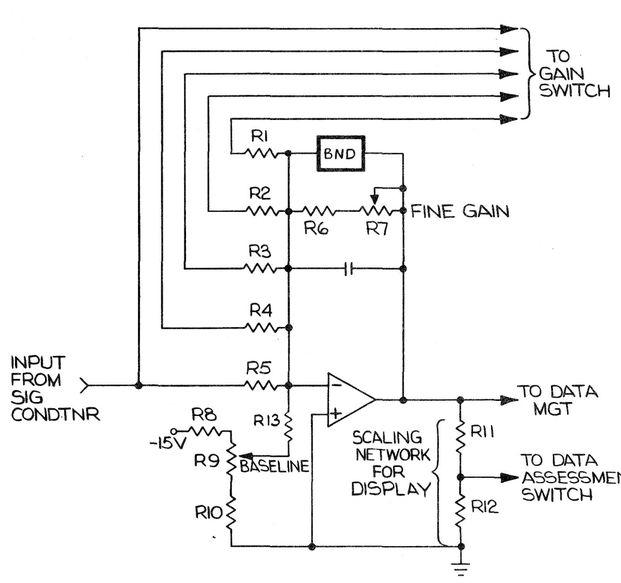
ER47E220722 REV E



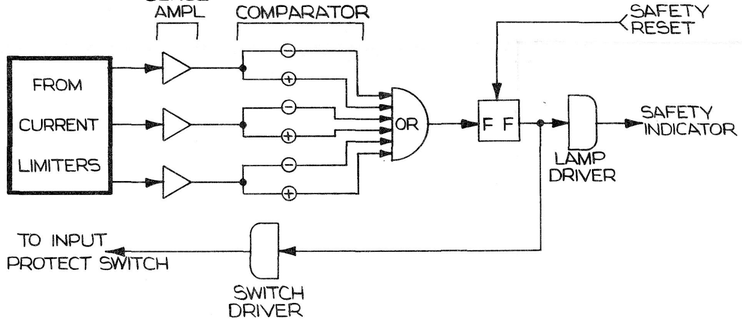
TYP BIOPOTENIAL AMPLIFIER UNIT SCHEMATIC



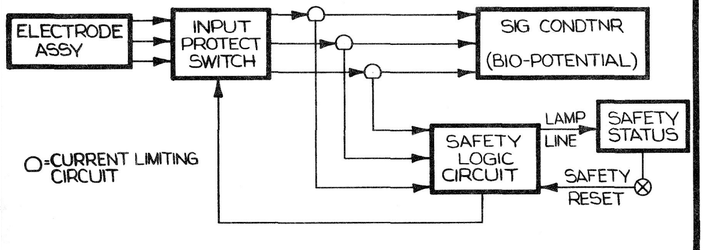
TYP DC-DC INVERTER POWER SUPPLY



TYP POST AMPLIFIER SCHEMATIC



TYP SAFETY LOGIC CIRCUIT



TYP BIOPOTENTIAL SAFETY CIRCUIT

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	29	9	70
CHECK	5	10	70
ENGR RELEASE	12	11	70
MFG	5	10	70
	6	10	70
	6	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA

CIRCUITS, TYPICAL
PE S/S
IMBLMS
B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220723

SCALE — SHEET 1 OF 1

47E220723	47E220696G1
DWG NO.	NEXT ASSY

ER47E220723 REV

ER47E220723 REV

FORM 847-0-01 PRINTED IN U.S.A.

SIZE		SHEET	REV
A	ER47A220724	1 OF 1	

REVISIONS

LTR	DESCRIPTION	DATE	APPROVED

SOURCE: SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO, TEXAS

GE PART NUMBER	PART DESCRIPTION	MANUFACTURER'S PART NUMBER
P1	SPECIMEN MASS MEASURING DEVICE ASSEMBLY	283731

PACKAGING - THE FOLLOWING SHALL APPEAR ON ALL PACKAGES: GE DRAWING AND PART NUMBER MANUFACTURER'S NAME & PART NUMBER

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

47A220724 P1	47E220G99G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON:

FRACTIONS ± DECIMALS ± ANGLES ±

ALL SURFACES ✓

MATL—

SIGNATURES	DAY	MO	YR
DRAWN T KAMPF	29	9	70
CHECKED	5	10	70
RELEASED	10	11	70
ENGRG	5	10	70
	5	10	70
	6	10	70
	6	10	70
	7	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA.

SPECIMEN MASS MEASURING DEVICE
SE S/S
IMBLMS B4

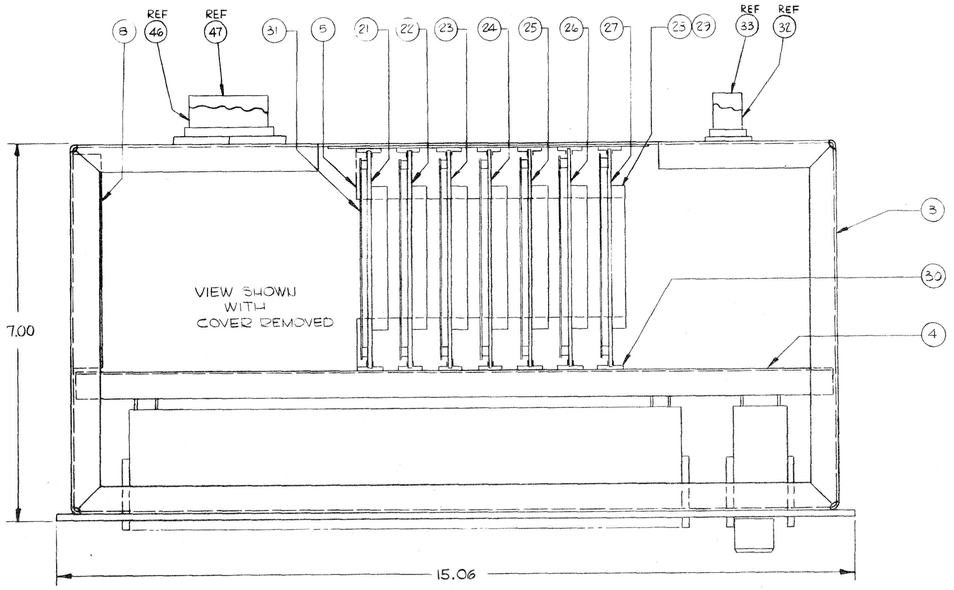
SIZE	CODE IDENT NO.	
A	23991	ER47A220724

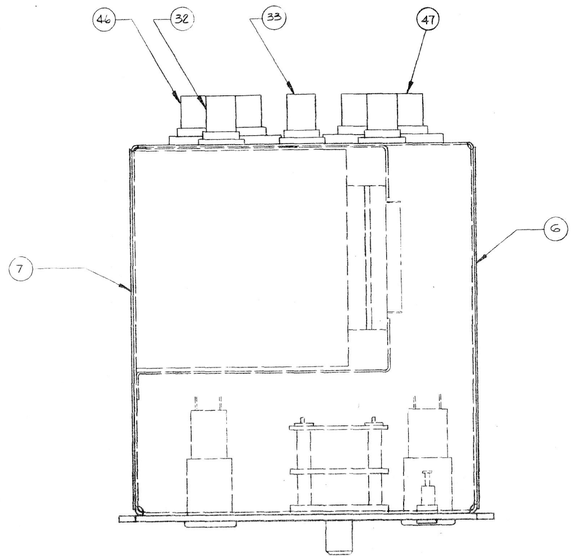
SCALE | SHEET 1 OF 1

DIST TO

FN 901-F (5-67) PRINTED IN U.S.A.

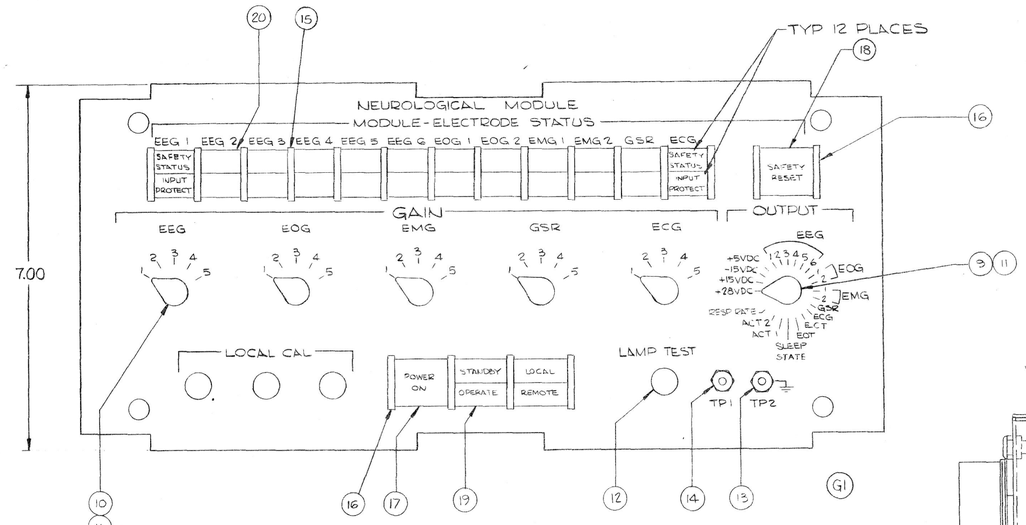
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

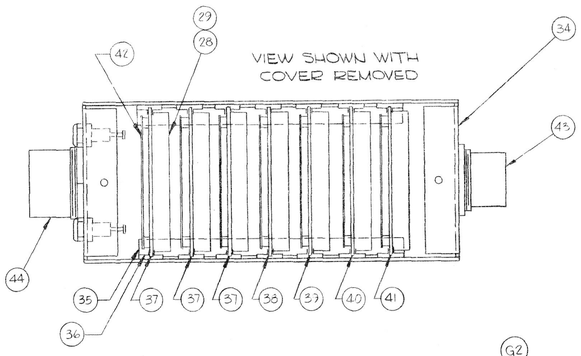


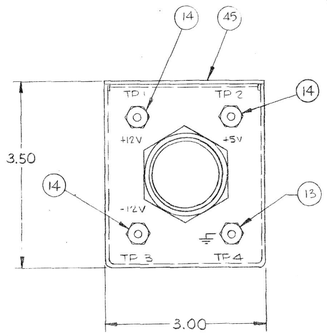


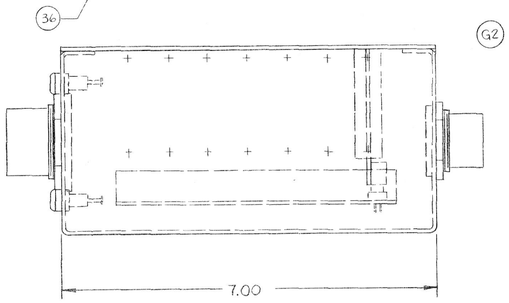
NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 11SA1664.
2. MARK GE47E220725 GROUP NO. OR PART NO. AS APPLICABLE PER 11SA1526 CLASS 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

PRELIMINARY









THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5311	NEUROLOGICAL MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (S). 1.1.1 - EOG/ENG, 1.1.3 - EMG,
70 SD 5243	SAFETY DESIGN REQUIREMENTS. 1.1.2 - EEG, 1.1.10 GSR
70 SD 5595	HUMAN ENGINEERING REQUIREMENTS. 1.2.1 - ECG & 1.2.3 ECT

VENDOR NOTES:
A. OAK MFG. CO. CRYSTAL LAKE ILL.
B. CONTROL CO OF AMERICA EDGCROFT, PA.
C. MASTER SPECIALTIES CO COSTA MESA, CALIF.
D. BENDIX CORP SIDNEY, N.Y.
E. AMP INC. HARRISBURG PA.
F. THE BIRTCHER CORP MONTEREY CALIF.

	-	1	LJT07RE-25-61S	47	CONNECTOR	D
	-	1	LJT07RE-25-61P	46	CONNECTOR	D
	1	-	47E220725P45	45	COVER, TOP	
	1	-	LJT07RE-17-55P	44	CONNECTOR	D
	1	-	LJT07RE-17-26S	43	CONNECTOR	D
	7	-	47E220725P42	42	SHIELD, P.C CARD	
	X	X	47E220694	41	SIGNAL FLOW DIAG	
	1	-	47E220725P40	40	POWER CONDITIONER	
	1	-	47E220725P39	39	EOG, EMG SIG CONDITIONER	
	1	-	47E220725P38	38	EMG SIG CONDITIONER	
	3	-	47E220725P37	37	EEG SIG CONDITIONER	
	14	-	17B-4-1	36	RETAINER PCB	F
	2	-	47E220725P35	35	ANGLE, SUPPORT	
	-	1	47E220725P34	34	CHASSIS	
	-	1	LJT07RE-9-6S	33	CONNECTOR	D
	-	1	LJT07RE-9-6P	32	CONNECTOR	D
	-	7	47E220725P11	31	SHIELD, P.C CARD	
		14	17B-7-1	30	RETAINER PCB	F
	7	7	202933-2	29	CONNECTOR	E
	7	7	202932-2	28	CONNECTOR	E
	-	1	47E220725P27	27	EEG, EOG, EMG POST AMPLIFIER CKT	
	-	1	47E220725P26	26	RESPIRATION RATE CIRCUIT	
	-	1	47E220725P25	25	EOT CIRCUIT	
	-	1	47E220725P24	24	ECT CIRCUIT	
	-	1	47E220725P23	23	SAFETY CIRCUITS & LAMP DRIVERS	
	-	1	47E220725P22	22	PROST CIRCUIT	
	-	1	47E220725P21	21	ECG, GSR POST AMPLIFIER	
	-	12	90EANC4F3J3RWL3N1	20	SWITCH, ILLUM. PUSH-BUTTON	C
	-	2	90EANC4F3J2WL2N1	19	SWITCH, ILLUM. PUSH-BUTTON	C
	-	1	90EANC4F3J1RL1N1	18	SWITCH, ILLUM. PUSH-BUTTON	C
	-	1	90EANC4F3J1WL1N1	17	SWITCH, ILLUM. PUSH-BUTTON	C
	-	6	90E505	16	BARRIER	C
	-	18	90E501	15	BARRIER	C
	3	1	MS16108-8A	14	TEST JACK (YELLOW)	
	1	1	MS16108-3A	13	TEST JACK (BLACK)	
	-	4	W3601-B	12	SWITCH, PUSH-BUTTON	B
	-	6	MS91528-0K1B	11	KNOB	
	-	5	399223A	10	SWITCH, ROTARY	A
	-	1	399459MF	9	SWITCH, ROTARY	A
	-	1	47E220725P8	8	DC-DC CONVERTER	
	-	1	47E222827G10	7	COVER, TOP	
	-	1	47E222827G14	6	COVER, BOTTOM	
	-	2	47E220725P5	5	PLATE, SUPPORT	
	-	1	47E220725P4	4	ANGLE SUPPORT	
	-	1	47E222827G2	3	MODULE	
	X	1	47E220725G2	2	ASSEMBLY, SIGNAL COND	
	-	X	47E220725G1	1	ASSEMBLY, CONTROL	
G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO	DESCRIPTION	SEE NOTE

REQUIREMENTS PER ASSY

LIST OF MATERIAL

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47E220725G2	47E222822G1		
47E220725G1	47E222822G1		
47E220725G2	47E220698G1		
47E220725G1	47E220698G1		
PART NO	NEXT ASSY		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO.	YR
DRAWN T.E. KAMPF	5	10	70
CHECKED M. Shuk	23	10	70
DSV PITTMAN W. H. F.	14	11	70
ENGR A. Gunderson	27	10	70
QUAL	2	11	70
PROJ Highstreet	2	11	70
MFG	2	11	70
M.J. A.'s.	2	11	70

GENERAL ELECTRIC
SPACE SYSTEMS 100 PHILA. PA.

MODULE, ASSEMBLY OF NEUROLOGICAL PHYSIOLOGICAL SUB-SYSTEM IMBUMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220725

SCALE 1:1 | SHEET 1 OF 1

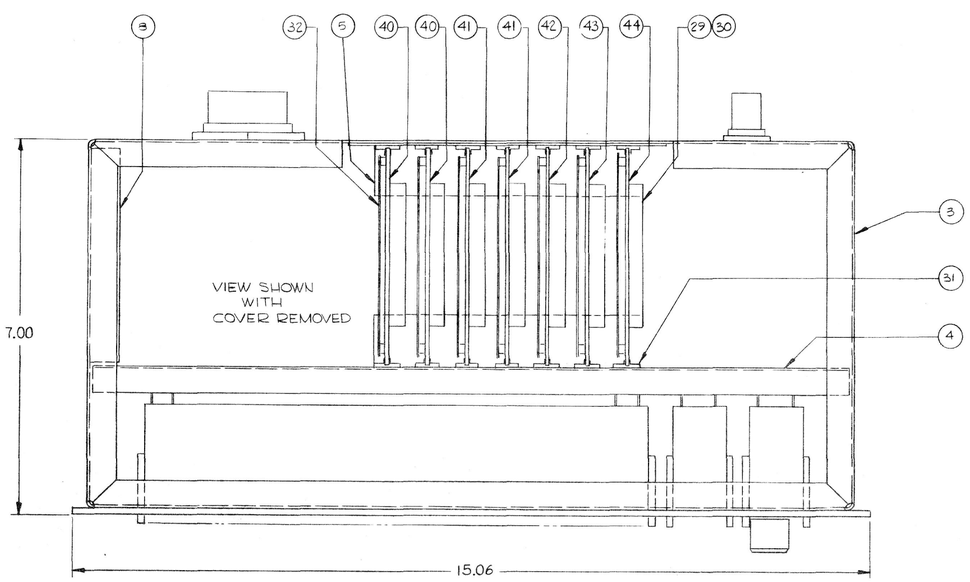
SEE ER47E220725 REV

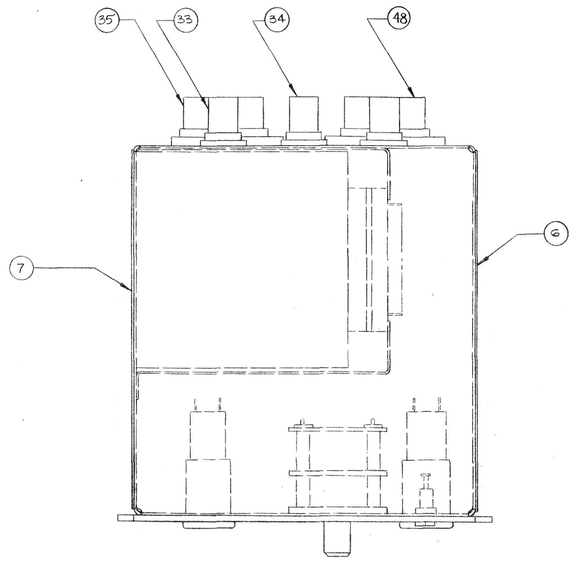
SEE ER47E220725

PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

PRELIMINARY

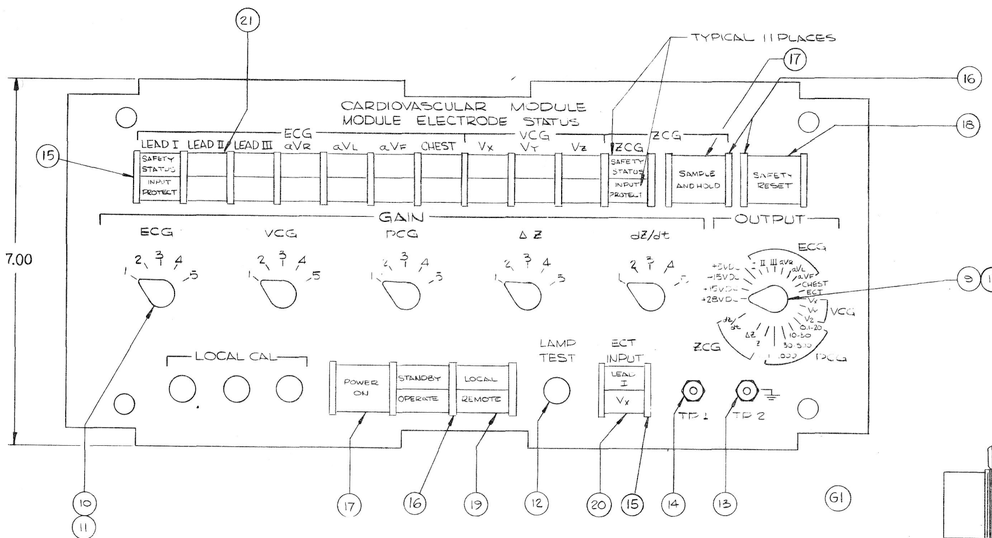


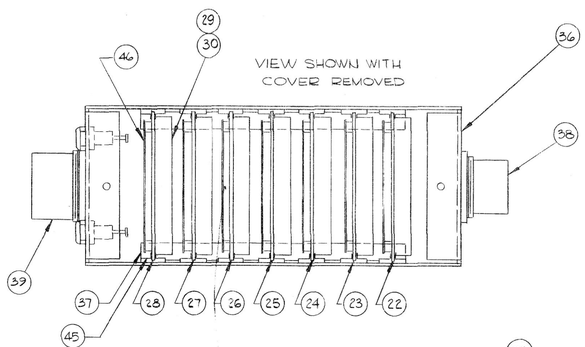


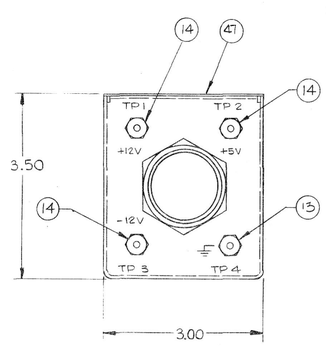
NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 11BA1664.
2. MARK GE47E220726 GROUP NO. OR PART NO. AS APPLICABLE PER 11BA1526 CLASS 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

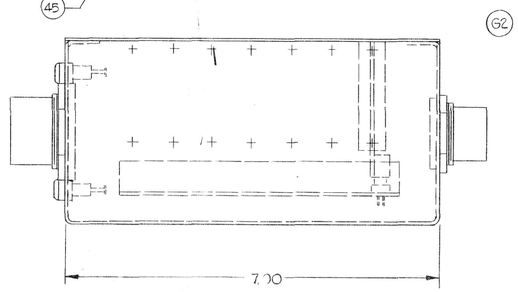
THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5315	CARDIOVASCULAR — MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s). 1.2.1 ECG, 1.2.2 VCG, 1.2.3 ECT, 1.2.2 PCG/V_bCG, 1.2.5 ZCG, 1.2.9 PWC, PWV, 1.2.11 C.O. KUBICEK, 1.2.13 C.O. AGRESS
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.









VENDOR NOTES:
- A. OAK MFG. CO CRYSTAL LAKE, ILL.
- B. CONTROL CO. OF AMERICA FOLCROFT, PA.
- C. MASTER SPECIALTIES CO. COSTA MESA, CALIF.
- D. BENDIX CORP SIDNEY, N.Y.
- E. AMP INC HARRISBURG PA.
- F. THE BIRTCHER CORP MONTEREY, CALIF.

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
		X	X	47E220713	49	SIGNAL FLOW DIAG	
		–	1	LJT07RE-25-6IS	48	CONNECTOR	D
		1	–	47E220726P47	47	COVER	
		7	–	47E220726P46	46	SHIELD	
		14	–	17B-4-1	45	RETAINER PCB	F
		–	1	47E220726P44	44	ECT CIRCUIT	
		–	1	47E220726P43	43	ZCG POST AMPLIFIERS & SAH CIRCUIT	
		–	1	47E220726P42	42	VCG POST AMPLIFIERS	
		–	2	47E220726P41	41	PCG FILTER CIRCUITS	
		–	2	47E220726P40	40	ECG POST AMPLIFIERS	
		1	–	LJT07RE-17-55P	39	CONNECTOR	D
		1	–	LJT07RE-17-26P	38	CONNECTOR	D
		2	–	47E220726P37	37	ANGLE, SUPPORT	
		1	–	47E220726P36	36	CHASSIS	
		–	1	LJT07RE-25-6IP	35	CONNECTOR	D
		–	1	LJT07RE-9-6P	34	CONNECTOR	D
		–	1	LJT07RE-9-6S	33	CONNECTOR	D
		–	7	47E220726-P32	32	SHIELD	
		–	14	17B-7-1	31	RETAINER PCB	F
		7	7	202932-2	30	CONNECTOR	E
		7	7	202933-2	29	CONNECTOR	E
		1	–	47E220726P28	28	LEAD I & II ECG SIGNAL CONDITIONERS	
		1	–	47E220726P27	27	LEAD III & aVR ECG SIGNAL CONDITIONERS	
		1	–	47E220726P26	26	aVL & aVF ECG SIGNAL CONDITIONERS	
		1	–	47E220726P25	25	CHEST & ECG SIGNAL CONDITONERS	
		1	–	47E220726P24	24	V_x, VCG SIGNAL CONDITIONERS & FRANK LEAD NTWK	
		1	–	47E220726P23	23	V_y & V_z VCG SIGNAL CONDITIONERS	
		1	–	47E220726P22	22	ZCG SIGNAL CONDITIONERS	
		–	11	90EAIC4F3J3RWL3N1	21	SWITCH, ILLUM. PUSH-BUTTON	C
		–	1	90EAIC4F3J3WL3N1	20	SWITCH, ILLUM. PUSH-BUTTON	C
		–	2	90EAIC4F3J2WL2N1	19	SWITCH, ILLUM. PUSH-BUTTON	C
		–	1	90EAIC4F3J1RL1N1	18	SWITCH, ILLUM. PUSH-BUTTON	C
		–	2	90EAIC4F3J1WL1N1	17	SWITCH, ILLUM. PUSH-BUTTON	C
		–	8	90E505	16	BARRIER	C
		–	14	90E501	15	BARRIER	C
		3	1	MS16108-8A	14	TEST JACK, (YELLOW)	
		1	1	MS16108-3A	13	TEST JACK (BLACK)	
		–	4	W9601-P5	12	SWITCH PUSH-BUTTON	B
		–	6	MS91528-0K1B	11	KNOB	
		–	5	399223A	10	SWITCH, ROTARY	D
		–	1	399659MF	9	SWITCH, ROTARY	D
		–	1	47E220726P8	8	DC-DC CONVERTER	
		–	1	47E222827G9	7	COVER, TOP	
		–	1	47E222827G13	6	COVER, BOTTOM	
		–	2	47E220726P5	5	PLATE, SUPPORT	
		–	1	47E220726P4	4	ANGLE, SUPPORT	
		–	1	47E222827G1	3	MODULE	
		X		47E220726G2	2	ASSEMBLY, SIGNAL CONTROL	
		–	X	47E220726G1	1	ASSEMBLY, CONTROL	

REQUIREMENTS PER ASSY — LIST OF MATERIAL

47E220726G2	47E220698G1
47E220726G1	47E220698G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ±, 3-PLACE DECIMALS ±, ANGLES ±, FRACTIONS ±, MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN T. Kaye	19	10	70
CHECKED J. Lloyd	20	10	70
ENGR APPR. PCB [illegible]	14	11	70
ENGR APPR. [illegible]	30	10	70
MFG APPR. [illegible]	30	10	70
QUALITY APPR. [illegible]	28	10	70
– [illegible]			
[illegible]	3	11	70

GENERAL ELECTRIC
SPACE SYSTEMS — LDC PHILA., PA.

MODULE, ASSEMBLY OF CARDIOVASCULAR PHYSIOLOGICAL SUB-SYSTEM IMBLMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220726

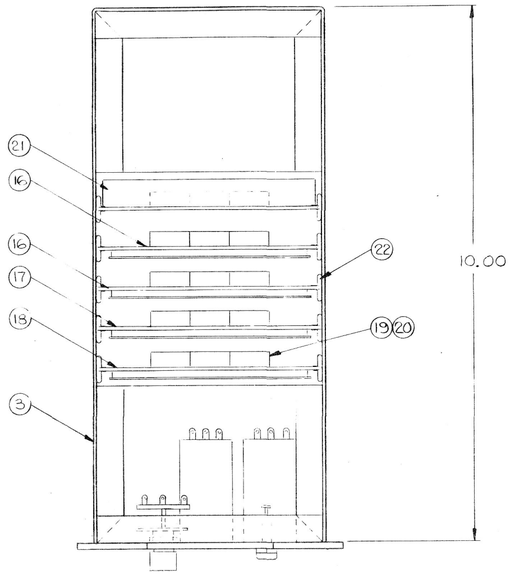
SCALE 1:1 | SHEET 1 OF 1

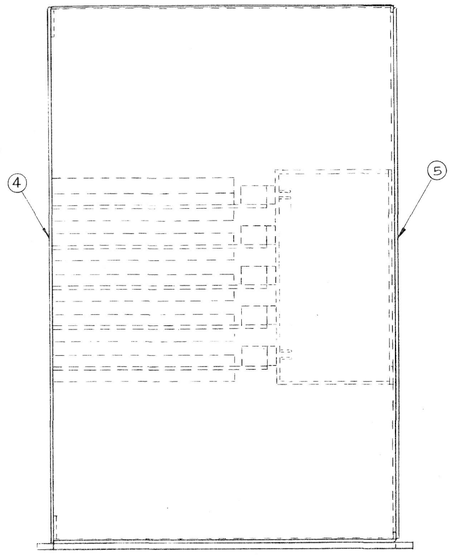
REV | SIZE E ER47E220726

REV | SIZE E ER47E220726

DWG NO.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5320	TEMPERATURE MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s). 1.5.1 EAR CANAL TEMP. 1.5.2 SKIN TEMP.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

VENDOR NOTES:

A MASTER SPECIALTIES
COSA MESA, CALIF.

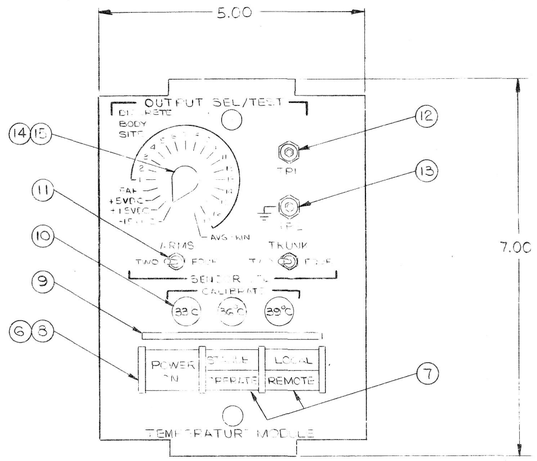
B ALCO ELECTRONIC PROD, INC
LAWRENCE, MASS.

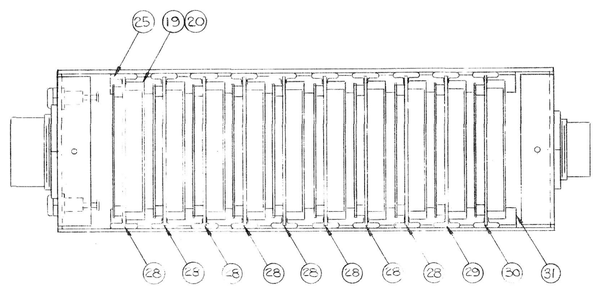
C CONTROLS CO OF AMERICA
FOLCROFT, PENNA.

D AMP INCORPORATED
HARRISBURG PENNA.

E. OAK MFG CO.
CRYSTAL LAKE, ILL

F. THE BIRTCHER CORP
MONTEREY PARK, CALIF

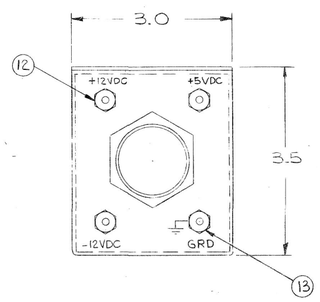


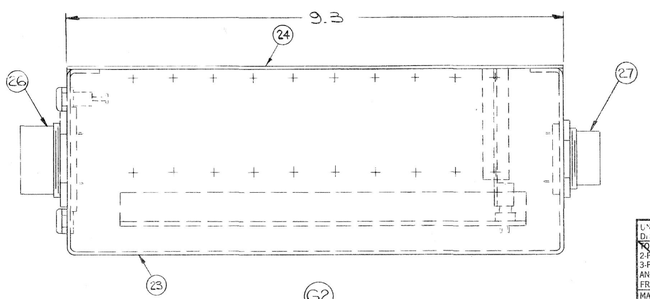


NOTES:

1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47E220747 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

G1





G2

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
		X		47E220766	32	DIAG, SIGNAL FLOW	
		2	–	47E220727P31	31	SUPPORT	
		1	–	47E220727P30	30	VOLTAGE REGULATOR	
		1	–	47E220727P29	29	SKIN TEMP&EAR CANAL TEMP CKT	
		8	–	47E220727P28	28	SKIN TEMP SIG COND CKT	
		1	–	LJT07RE-13-35P	27	CONNECTOR	
		1	–	LJT07RE-15-35P	26	CONNECTOR	
		20	–	17B-4-1	25	RETAINER PCB	F
		1	–	47E220727P24	24	COVER, TOP	
		1	–	47E220727P23	23	CHASSIS	
		–	10	17B-7-1	22	RETAINER PCB	F
		–	1	47E220727P21	21	CONVERTER, DC-DC	
		10	5	202933-2	20	CONNECTOR PLUG	D
		10	5	202932-2	19	CONNECTOR RECEPTACLE	D
		–	1	47E220727P18	18	CAL& CONTROL LOGIC	
		–	1	47E220727P17	17	WEIGHTED AVERAGE CKT	
		–	2	47E220727P16	16	POST AMPLIFIER	
		–	1	MS91528-0K1B	15	KNOB	
		–	1	399659MF	14	SWITCH, ROTARY	E
		1	1	MS16108-3A	13	TEST JACK, BLACK	
		5	1	MS16108-8A	12	TEST JACK, YELLOW	
		–	2	MSTG-106D	11	SWITCH, TOGGLE	B
		–	3	W9601-B	10	SWITCH, PUSHBUTTON	C
		–	1	47E220727P9	9	BARRIER	
		–	4	90E505	8	BARRIER	A
		–	2	90EA1C4FBJ2 WLEN1	7	SWITCH, PUSHBUTTON, ILLUM.	A
		–	1	90EA1C4FBJ1 WLIN1	6	SWITCH, PUSHBUTTON, ILLUM.	A
		–	1	47E222825P14	5	COVER, BOTTOM	
		–	1	47E222825G10	4	COVER, TOP	
		–	1	47E222825G2	3	MODULE	
		X	–	47E220727G2	2	ASSEMBLY, SIGNAL COND.	
		–	X	47E220727G1	1	ASSEMBLY, CONTROL	

LIST OF MATERIAL

PART NO.	NEXT ASSY
47E220727G2	47E220698G1
47E220727G1	47E220698G1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL –
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN E.J. Baker	3	10	70
CHECKED [illegible]	21	10	70
ENGR APPR [illegible]	14	11	70
PROJ [illegible]	27	10	70
MFG [illegible]	27	10	70
QUALITY [illegible]	27	10	70
[illegible]	28	10	70
[illegible]	29	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

MODULE, ASSY OF TEMPERATURE
PE S/S
IMBLEMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220727

SCALE 1/1 | SHEET 1 OF 1

DSD

REV E ER47E220727

REV E ER47E220727

FORM-BELP 11-66 PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

SUBJECT

ELECTRODES

UNIT NO.1

CURRENT LIMITING CIRCUITS

EEG NO.1 | EEG NO.2 | EEG NO.3 | EEG NO.4 | EEG NO.5 | EEG NO.6 | EOG NO.1 | EOG NO.2 | EMG NO.1 | EMG NO.2 | GND

SIGNAL CONDITIONERS

CALIBRATE

VOLTAGE REGULATORS (+12, -12, +2)

EEG NO.1 | EEG NO.2 | EEG NO.3 | EEG NO.4 | EEG NO.5 | EEG NO.6 | EOG NO.1 | EOG NO.2 | EMG NO.1 | EMG NO.2 | POWER (+15, -15, +5) | CALIBRATE (½, 1, 2)

ANALOG OUTPUTS

ELECTRODES
PREAMPLIFIERS

UNIT NO.2

FRANK LEAD NETWORK

CURRENT LIMITING CIRCUITS

Vx | Vy | Vz | GND

SIGNAL CONDITIONERS

CALIBRATE

VOLTAGE REGULATORS (+12, -12, +2)

Vx | Vy | Vz | POWER (+15, -15, +5) | CALIBRATE (½, 1, 2)

ANALOG OUTPUTS

ELECTRODES
PREAMPLIFIERS

UNIT NO.3

INPUT NETWORK

CURRENT LIMITING CIRCUITS

I | II | III | aVR | aVL | aVF | CHEST | GND

SIGNAL CONDITIONERS

CALIBRATE

VOLTAGE REGULATORS (+12, -12, +2)

LEAD I | LEAD II | LEAD III | aVR | aVL | aVF | CHEST | POWER (+15, -15, +5) | CALIBRATE (½, 1, 2)

ANALOG OUTPUTS

MICROPHONE | THERMISTOR

UNIT NO.4

PCG/VbCG SIGNAL CONDITIONER

EAR CANAL TEMPERATURE SIGNAL CONDITIONER

CALIBRATE

VOLTAGE REGULATORS (+12, -12)

PCG/VbCG | EAR CANAL TEMP | POWER (+15, -15, +5) | CALIBRATE (½, 1, 2)

ANALOG OUTPUTS

TO DATA TRANSPONDER UNIT

PRELIMINARY

47D220729	47D222817G1
DRAWING NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ±, 3-PLACE DECIMALS ±, ANGLES ±, FRACTIONS ±, MATERIAL— ALL SURF. ✓

SIGNATURES		DAY	MO	YR
DRAWN	F. Hill	5	10	70
CHECKED	Released per	6	10	70
		10	11	70
ENGRG	Rembardt	6	10	70
MFG	Manhatt	6	10	70
	E.S. Tolman	6	10	70
	R.J. DiSalvo	6	10	70
	[illegible]	7	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA.

DIAGRAM, SIGNAL FLOW
BIO-TELEMETRY
SIGNAL CONDITIONER UNIT
PE S/S IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D220729

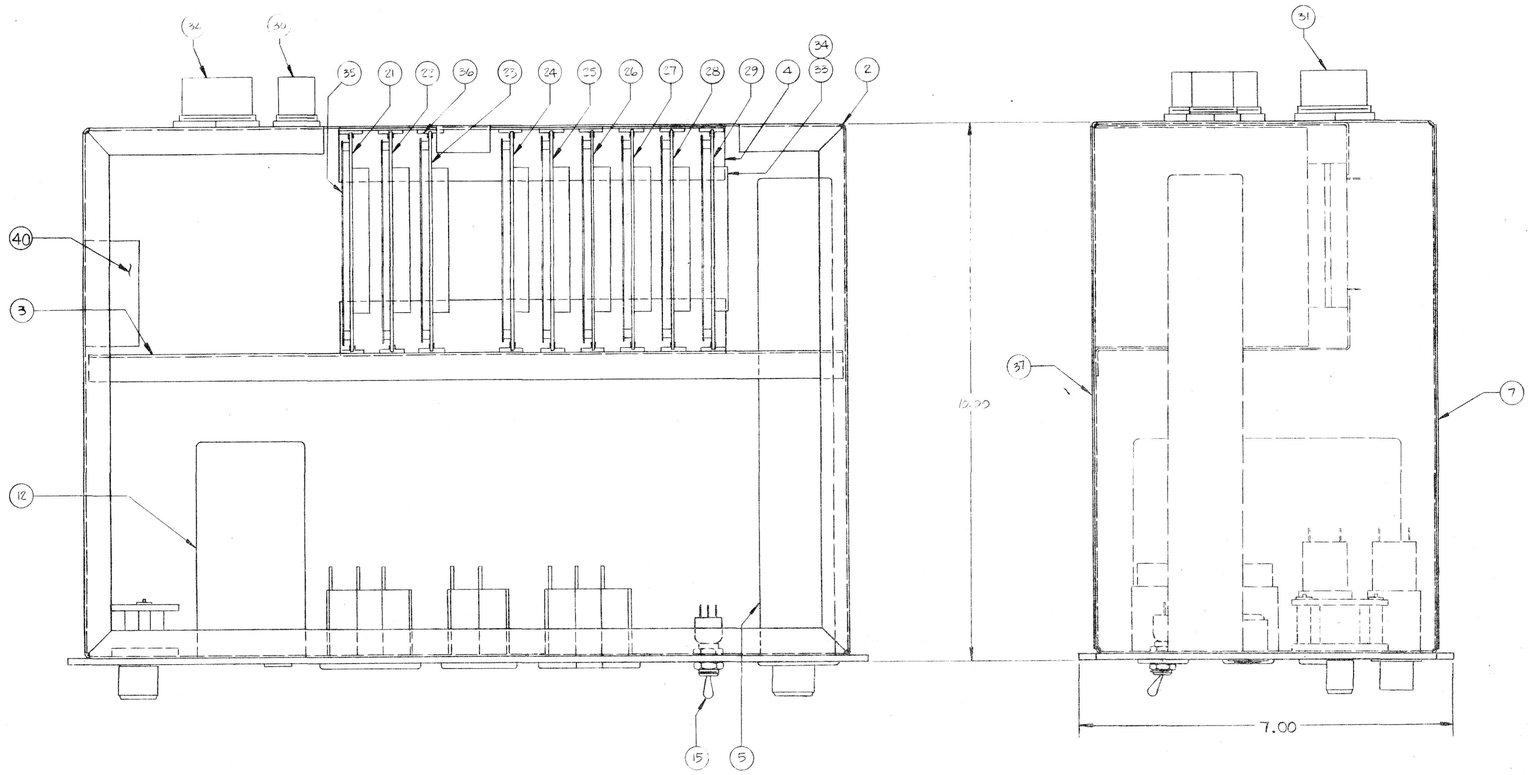
SCALE NONE | SHEET 1 OF 1

DIST LIST

SIZE D | ER47D220729 | REV

FN-666-F [5-69]
PRINTED IN U.S.A.

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE / APPROVED

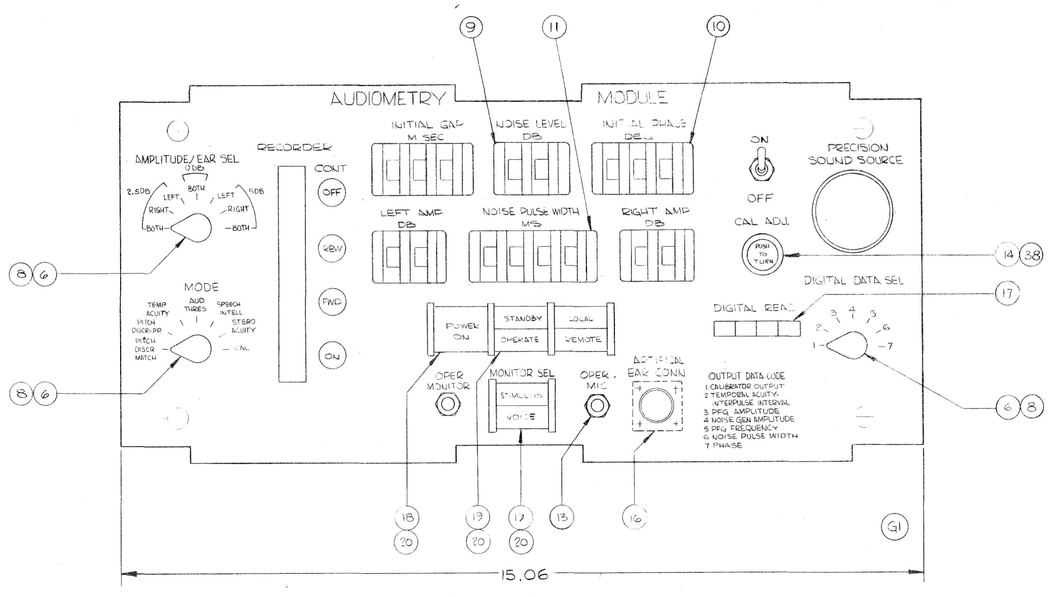


PRELIMINARY

NOTES
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 11BA1664.
2. MARK GE47E220730 GNO. OR P NO. AS APPLICABLE PER 11BA1526 CLASS 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5250	AUDIOMETRY MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s).
	2.2.1 PITCH DISC
	2.2.2 TEMP ACUITY
	2.2.3 AUD THRESH
	2.2.4 SPEECH INTEL.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
70SD5288	REMOTE DATA CONTROL UNIT SPECIFICATION (PFG)



VENDOR NOTES:
- A. OAK MFG. CO CRYSTAL LAKE, ILL.
- B. CHERRY ELECT. PRODS CORP HIGHLAND PARK, ILL.
- C. ALCO ELECTRONICS PROD INC LAWRENCE, MASS
- D. BENDIX ELEC COMP DIV SIDNEY, N.Y.
- E. ELECTRONIC SPECIAL PRODS, DIV. OF MONSANTO COSTA MESA, CALIF.
- F. MASTER SPECIALTIES CO COSTA MESA, CALIF
- G. PRECISION CONT MONTEREY, CALIF
- H. AMP INC HARRISBURG, PA.
- J. RAYTHEON CO IND COMP OPER QUINCY, MASS
- K. BOURNS INC RIVERSIDE, CALIF
- L. SWITCHCRAFT INC CHICAGO, ILL.

	1	47E220730P40	40	MODULE, POWER SUPPLY	
	X	47E220688	39	DIAG, SIGNAL FLOW	
	1	3438-S	38	PONTENTIOMETER	K
	1	47E220827G10	37	COVER, TOP	
	18	178-7-1	36	RETAINER PCB	G
	9	47E220730P35	35	SHIELD	
	9	202933-2	34	CONNECTOR	H
	9	202931-2	33	CONNECTOR	H
	1	UTORE-21-1P	32	CONNECTOR	D
	1	UTORE-15-22P	31	CONNECTOR	D
	1	UTORE-9-6P	30	CONNECTOR	D
	1	47E220730P29	29	INPUT/OUTPUT CONTROL LOGIC	
	1	47E220730P28	28	PFG PHASE CONTROL LOGIC	
	1	47E220730P27	27	PFG FREQUENCY CONTRO LOGIC	
	1	47E220730P26	26	PFG AMPLITUDE CONTROL LOGIC	
	1	47E220730P25	25	RECORDER DECODE LOGIC	
	1	47E220730P24	24	CALIBRATOR CKT	
	1	47E220730P23	23	NOISE GENERATOR & CONTROL CKT	
	1	47E220730P22	22	SPEECH INTELIGIBILITY AMPLIFIER	
	1	47E220730P21	21	RECORDER CONTROL CKT	
	6	3-1565-5	20	BARRIER	F
	3	90EA1C4F5J2W1ZN1	19	SWITCH, ILLUM. PUSH-BUTTON	E
	1	90EA1C4F5J1W1LN1	18	SWITCH, ILLUM. PUSH-BUTTON	F
	4	MAN-1	17	ALPHA NUMERIC DISPLAY	E
	1	UJTP00RE-9-6S	16	CONNECTOR	D
	1	MSTH-106D	15	SWITCH TOGGLE	C
	1	PT70-2-2	14	KNOB, SELF-LOCK	J
	2	42A	13	PHONE JACK	L
	1	47E220730P12	12	RECORDER	
	1	T10-01M-4	11	SWITCH, THUMBWHEEL	B
	2	T10-01M-5	10	SWITCH, THUMBWHEEL	B
	3	T20-01M-2	9	SWITCH, THUMBWHEEL	B
	3	MS91528-0K18	8	KNOB	
	1	47E220827G14	7	COVER, BOTTOM	
	5	399217A	6	SWITCH ROTARY	A
	1	47A220761P1	5	PISTONPHONE (MODEL 4220)	
	1	47E220730P4	4	PLATE, SUPPORT	
	1	47E220730P3	3	ANGLE, SUPPORT	
	1	47E222827G2	2	MODULE	
	X	47E220730G1	1	ASSEMBLY, CONTROL UNIT	
G4 G5 G7 G1 REQUIREMENTS PER ASSY		IDENTIFICATION NO.	ITEM NO	DESCRIPTION	SEE NOTE

LIST OF MATERIAL

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	SIGNATURES	DAY	MO	YR
TOLERANCES ON: 2 PLACE DECIMALS ±	DRAWN	22	10	70
3 PLANE DECIMALS ±	CHECKED	22	10	70
ANGLES ±	ENGR APPROVED	14	11	70
FRACTIONS ±	MFG APPROVED	21	11	70
MATERIAL–	QUALITY	23	11	70
ALL SURF. ✓	PROJECT MGR	23	10	70
	CONTRACT ADMIN	27	11	70
	CONTRACTOR	23	10	70

GENERAL ELECTRIC
SPACE SYSTEMS DIVISION PHILA. PA.

MODULE, ASSEMBLY OF AUDIOMETRY PE/SS
IMSCMS Bd

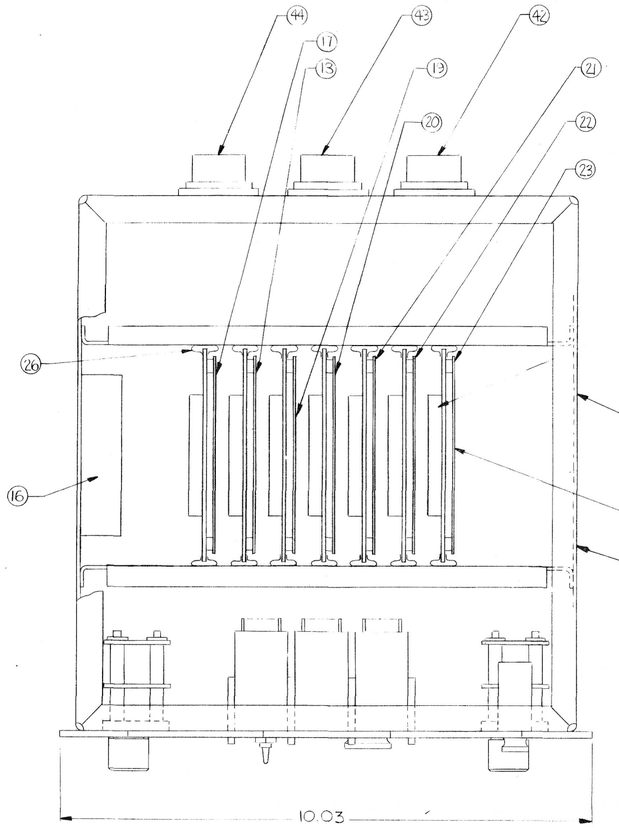
SIZE	CODE IDENT NO.	
E	23991	ER47E220730

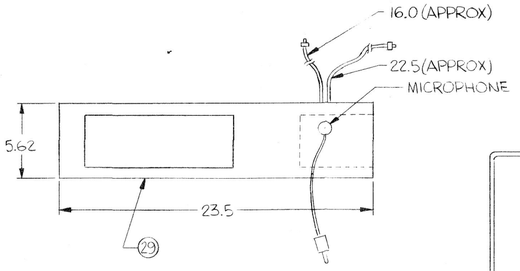
SCALE 1:1 SHEET 1 OF 1

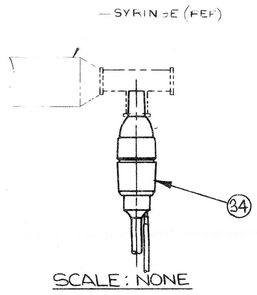
47E220730G1	47E220700G1
PART NO	NEXT ASSY

PRINTED IN U.S.A.

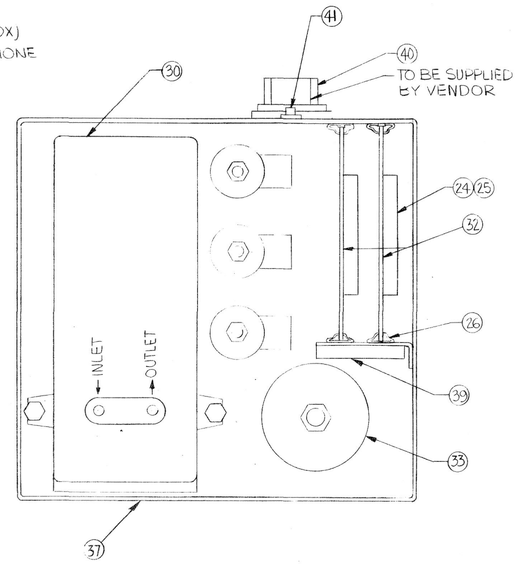
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

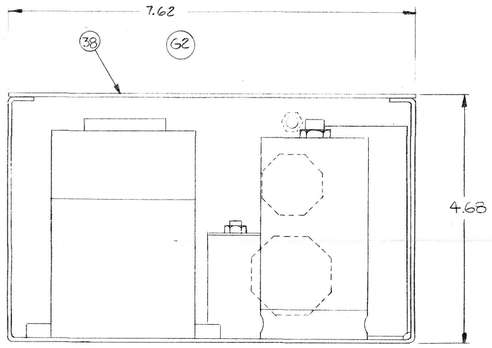






SCALE: NONE





NOTES:
1. INTERPRETATION OF DWG TERMS AND TOLERANCES PER 11SA1664
2. MARK "GE 47E220731" (GROUP OR PART NUMBER AS APPLICABLE) PER 11SA1526 CL 21
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE
4. MECHANICAL / PNEMATIC INTERCONNECTIONS BETWEEN FUNCTIONAL ASSY'S PER G.E. DWG 47C220689
5. SYRINGE INTERFACE WITH ITEM 34 SHOWN FOR REFERENCE ONLY SYRINGE IS USED FOR VENI PUNCTURE

VENDOR NOTES:
A) STATHAM INSTRUMENTS INC., LOS ANGELES, CALIF
B) CONSOLIDATED CONTROLS CORP, BETHEL, CONN.
C) SKINNER ELEC VALVE, NEW BRITAIN, CONN.
D) METAL BELLOWS CORP, SHARON, MASS.
E) OAK MFG CO, CRYSTAL LAKE, ILL.
F) MASTER SPECIALTIES CO, COSTA MESA, CALIF.
G) CONTROL CO OF AMERICA, FOLCROFT, PA.
H) AMP CORP, HARRISBURG, PA.
J) THE BIRTCHER CORP, MONTEREY, CALIF.
K) ALCO ELECTRONIC PROD LAWRENCE, MASS.
L) PILLING CO, FT WASHINGTON, PA.
M) SWITCHCRAFT INC, CHICAGO, ILL.

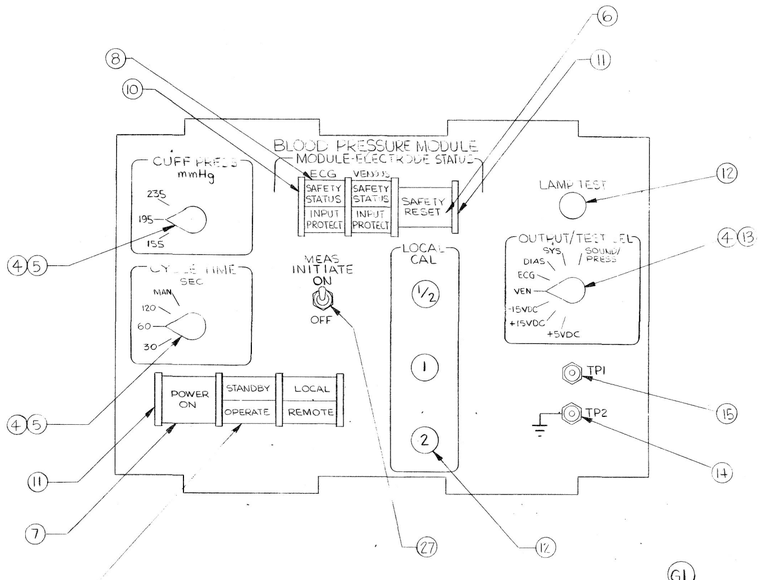
PRELIMINARY

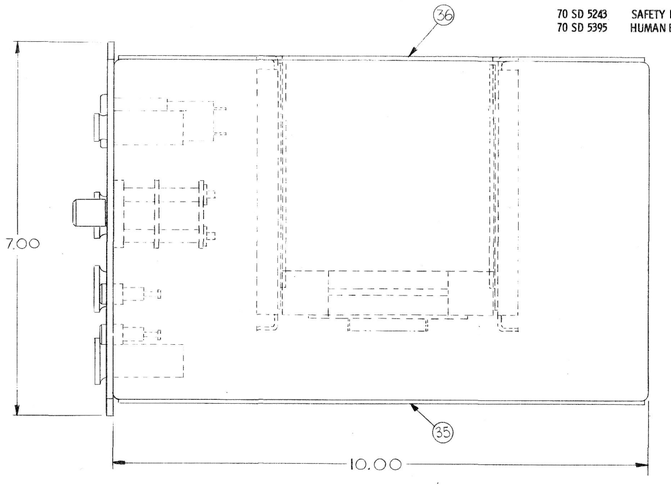
	-	X	47E220718	46	DIAG SIGNAL FLOW	
	-	X	47E220689	45	SCHEMATIC, ELECTRO MECH	
	-	1	LJT07RE-17-35PA	44	CONNECTOR	
	-	1	LJT07RE-17-35P	43	CONNECTOR	
	-	1	LJT07RE-9-6P	42	CONNECTOR	
1	-		42A	41	PHONE JACK	M
1	-		LJT07RE 17-35S	40	CONNECTOR	
1	-		47E220731 P39	39	SUPPORT	
1	-		P38	38	COVER	
1	-		47E220731 P37	37	CHASSIS	
-	1		47E222826G10	36	COVER, TOP	
-	1		47E222826G14	35	COVER, BOTTOM	
-	1		29198	34	TRANSDUCER, MINIATURE BLOOD PRES.	A
1	-		41PL20	33	CUFF PRESSURE TRANSDUCER	B
2	-		47E220731 P32	32	VALVE DRIVER CIRCUIT	
3	-		B2DA9026	31	SOLENOID VALVE	C
1	-		MB-21	30	PUMP	D
-			70-1314	29	OCCLUSIVE CUFF	L
-	7		47E220731 P23	23	SHIELD	
-	1		MSTG-106D	27	SWITCH, TOGGLE	K
4	14		17B-7-1	26	RETAINER, PCB	J
2	7		202933-2	25	CONNECTOR	H
2	7		202932-2	24	CONNECTOR	H
-	1		47E220731 P23	23	LOGIC CONTROL CIRCUIT	
-	1		P22	22	LOGIC CONTROL CIRCUIT	
-	1		P21	21	SAMPLE/HOLD CIRCUIT	
-	1		P20	20	SIGNAL COND/SUMMER CIRCUIT	
-	1		P19	19	FILTER CIRCUIT ASSY	
-	1		P18	18	ECG CIRCUIT ASSY	
-	1		P17	17	VENOUS BLOOD PRESS. CIRCUIT	
-	1		47E220731 P16	16	POWER SUPPLY	
-	1		MS16103-9A	15	TEST JACK (YELLOW)	
-	1		MS16103-3A	14	TEST JACK (BLACK)	
-	1		399217A	13	SWITCH, ROTARY	E
-	4		W96DI-B	12	SWITCH, PUSH BUTTON	G
-	5		90E505	11	BARRIER	F
-	3		90E501	10	BARRIER	F
-	2		30EA1C4F3J2WL2N1	9	SWITCH, ILLUMINATED PUSH BUTTON	F
-	2		30EA1C4F3J1SRW1SN1	8	SWITCH, ILLUMINATED PUSH BUTTON	F
-	1		30EA1C4F3 J1WL1N1	7	SWITCH, ILLUMINATED PUSH BUTTON	F
-	1		30EA1C4F3 J1RL1N1	6	SWITCH, ILLUMINATED PUSH BUTTON	F
-	2		399223A	5	SWITCH, ROTARY	E
-	3		MC91528-0K1B	4	KNOB	
-	1		47E226826G2	3	MODULE	
X	-		47E220731G2	2	ASSEMBLY, PUMP	
-	X		47E220731G1	1	ASSEMBLY, CONTROL UNIT	

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASSY.						LIST OF MATERIAL	

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5316	BLOOD PRESSURE — MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s). 1.2.6 ART BLOOD PRESS 1.2.7 VENOUS BLD. PRESS 1.2.1 ECG
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.





REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47E220731G2	47E220696G1
47E220731G1	47E220698G1
PART NO	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	12	10	70
CHECKED	29	10	70
ENGR	14	11	70
ENGR	30	10	70
	2	11	70
	2	11	70
	3	11	70
	5	11	70

GENERAL ELECTRIC
SPACE SYSTEMS 100 PHILA PA

MODULE, ASSEMBLY OF BLOOD PRESSURE PHYSIOLOGICAL SUB SYSTEM IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220731

SCALE 1:1 SHEET 1 OF 1

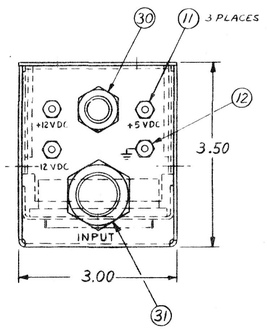
REV

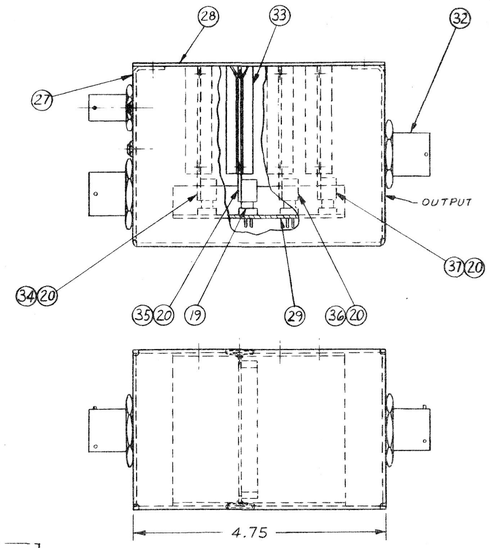
SIZE E ER47E220731

DIST TO

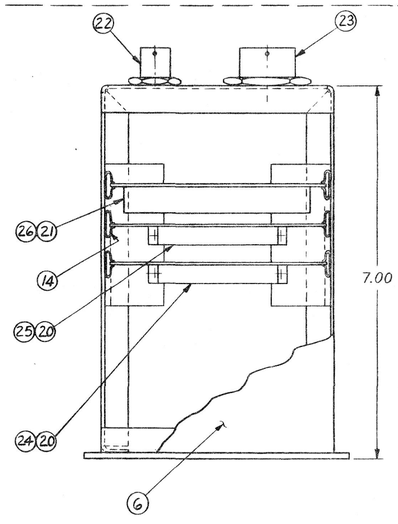
PN-2670-P (1-68) PRINTED IN U.S.A.

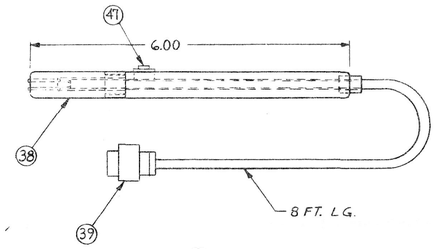
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



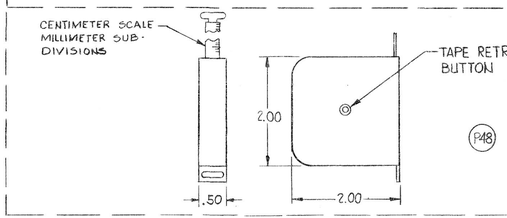


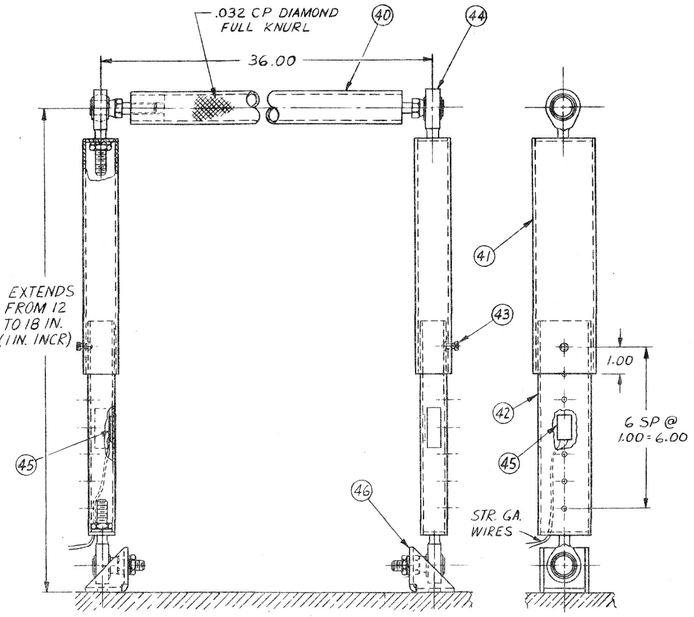
G2





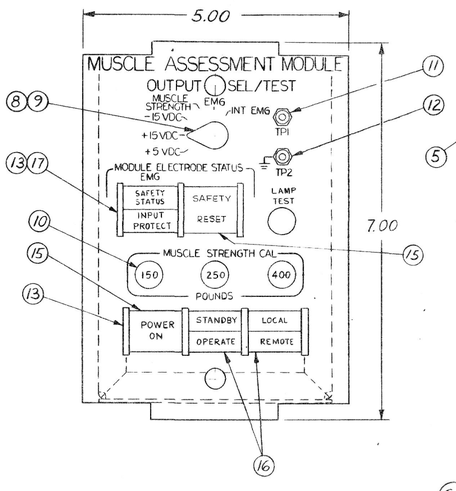
G3

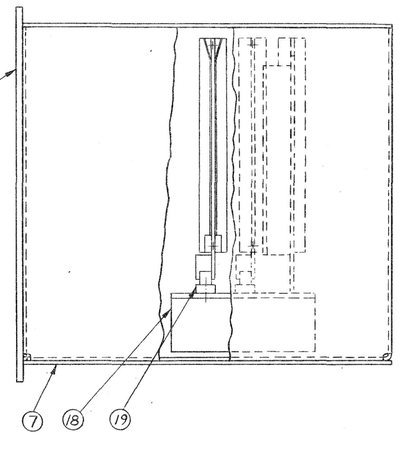




G4

SCALE 1/2" = 1"





G1

PRELIMINARY

NOTES:
1. INTERPRETATION OF DRAWING TERMS & TOLERANCES PER 118A1664.
2. MARK GE 47E220732__ GROUP OR PART NO. AS APPLICABLE PER 118A1526, CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5321	MUSCULAR ASSESSMENT MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s). 1.5.3 - MUSCLE SIZES STR 1.1.3 - EMG
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

VENDOR NOTES:
- A. OAK MFG. CO. CRYSTAL LAKE, ILL.
- B. CONTROLS CO. OF AMERICA. FOLCROFT, PA.
- C. MASTER SPECIALTIES CO. COSTA MESA, CALIF.
- D. THE BIRTCHER CORP. MONTEREY PARK, CALIF.
- E. AMP INC. HARRISBURG, PA.
- F. BENDIX CORP. SIDNEY, N.Y.
- G. VLIER ENG. CORP, LOS ANGELES, CALIF.
- H. SUPERIOR BALL JOINT CO. NEW HAVEN, INDIANA.
- I. MICRO SYSTEMS INC. SAN GABRIEL, CALIF.
- J. GRAYHILL INC. LA GRANGE, ILL

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
			X	47D220733	49	DIAG., SIGNAL FLOW	
				47E220732P48	48	TAPE MEASURE	
		1		TYPE 39-2	47	SWITCH, PUSHBUTTON	J
2				47E220732P46	46	ANCHOR BRACKET	
2				MS 105	45	STRAIN GAUGE	I
4				SPM-8S	44	BALL JOINT	H
2				SL-500	43	PLUNGER, RETRACTABLE	G
2				47E220732P42	42	ARM, ADJUSTABLE	
2				47E220732P41	41	ARM, SUPPORT	
1				47E220732P40	40	BAR	
	1			LJT06RE-9-6P	39	CONNECTOR	F
	1			47E220732P38	38	PROBE	
		1		47E220732P37	37	CIRCUIT, STRAIN GAUGE SIG. COND.	
		1		47E220732P36	36	CIRCUIT, STIMULUS BUFFER	
		1		47E220732P35	35	CIRCUIT, EMG SIG. COND.	
		1		47E220732P34	34	CIRCUIT, VOLTAGE REGULATOR	
		8		178-4-1	33	RETAINER, PCB	D
		1		LJT07RE-11-35S	32	RECEPT., CONNECTOR	F
		1		LJT07RE-11-35P	31	RECEPT., CONNECTOR	F
		1		LJT07RE-9-6S	30	RECEPT., CONNECTOR	F
		1		47E220732P29	29	BRACKET, PCB SUPPORT	
		1		47E220732P28	28	COVER	
		1		47E220732P27	27	BOX, SIGNAL COND.	
			1	47E220732P26	26	BOARD, MTG., CONVERTER	
			1	47E220732P25	25	CIRCUIT, EMG POST AMPL. & INTEGRATOR	
			1	47E220732P24	24	CIRCUIT, STRAIN GAUGE POST AMPL.	
			1	LJT07RE-17-35P	23	RECEPTACLE, CONNECTOR	F
			1	LJT07RE-9-6P	22	RECEPTACLE, CONNECTOR	F
			1	47E220732P21	21	CONVERTER DC-DC	
		4	2	202933-2	20	HEADER, CONNECTOR	E
		4	2	202932-2	19	RECEPTACLE, CONNECTOR	E
			2	47E220732P18	18	* BRACKET, ANGLE	
			1	90EA1C4F3J2W1R2N	17	SWITCH, ILLUMIN. P.B.	C
			2	90EA1C4F3J2W2N1	16	SWITCH, ILLUMIN. P.B.	C
			2	90EA1C4F3J1W1N1	15	SWITCH, ILLUMIN. P.B.	C
			6	178-8-1	14	RETAINER, PCB	D
			7	90E505	13	BARRIER	C
		1	1	MS16108-3A	12	JACK, TEST-BLACK	
		3	1	MS16108-8A	11	JACK, TEST-YELLOW	
			4	W9601-8	10	SWITCH, PUSHBUTTON	B
			1	399223A	9	SWITCH, ROTARY	A
			1	M591528-0K1B	8	KNOB	
			1	47E222825P13	7	COVER, BOTTOM	
			1	47E222825G9	6	COVER, TOP	
			1	47E222825G1	5	MODULE	
				47E220732G4	4	ASSEMBLY, MUSCLE ASSESSMENT DEVICE	
				47E220732G3	3	ASSEMBLY, PROBE	
				47E220732G2	2	ASSEMBLY, SIGNAL CONDITIONER	
				47E220732G1	1	ASSEMBLY, CONTROL	

LIST OF MATERIAL

REDUCED SIZE PRINT

SCALE: 0 — 1 — 2 INCHES

47E220732P48	47E220696G1
47E220732G4	47E220696G1
47E220732G3	47E220698G1
47E220732G2	47E220698G1
47E220732G1	47E220698G1
PART NO.	NEXT ASS'Y

*UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURFS ✓

SIGNATURES	DAY	MO	YR
DRAWN	16	10	70
CHECKED	27	10	70
ENGR	14	11	70
MFG	27	10	70
QUAL	29	10	70
PROJ	29	10	70
	27		

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA (STC)

MODULE, ASS'Y OF, MUSCLE ASSESSMENT PE S/S IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220732

SCALE 1/1 SHEET 1 OF 1

USED ON ER47E220732 REV E

USED ON ER47E220732 REV E

FORM 885-P (5-69) PRINTED IN U.S.A.

PART OF CAD S/S

TAPE MEASURE

OPERATOR

KEYBOARD

TO RDCU

SUBJECT

ISOMETRIC EXERCISE DEVICE

CONTROL SUB-ASSEMBLY

LOCAL/REMOTE SWITCH

TO SMDM

POST AMPLIFIER

EMG

TO RDCU

INPUT PROJECT

REMOTE CONTROL

TO RDCU

INPUT PROTECT

SAFETY CIRCUIT

EMG SIGNAL CONDITIONER

POST AMPLIFIER

FORCE

TO RDCU

ASSESSMENT SWITCH

DATA

SAFETY CIRCUIT

SAFETY STATUS

TO RDCU

STRAIN GAUGE SIGNAL CONDITIONER

EMG INTEGRATOR

INTEGRATED EMG

TO RDCU

STIMULATOR BUFFER

STIMULUS

TO RDCU

PROBE

CALIB.

POST-REGULATOR

DC - DC CONVERTER

28 VOLTS

TO EP&SD

CALIBRATION LOGIC

REMOTE CAL

TO RDCU

SIGNAL CONDITIONER SUB-ASSEMBLY

PRELIMINARY

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

SIGNATURES	DAY	MO	YR
DRAWN	5	10	70
CHECKED	9	10	70
	10	11	70
ENGR	9	10	70
	9	10	70
	9	10	70
	12	10	70

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

GENERAL ELECTRIC
SPACE SYSTEMS LOC. PHILA., PA.

DIAGRAM, SIGNAL FLOW
MUSCLE ASSESSMENT MODULE
PE S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D220733

SCALE NL SHEET 1 OF 1

47D220733	47E220732G1
DWG NO.	NEXT ASSY

SIZE D ER47D220733 REV

DIST NO

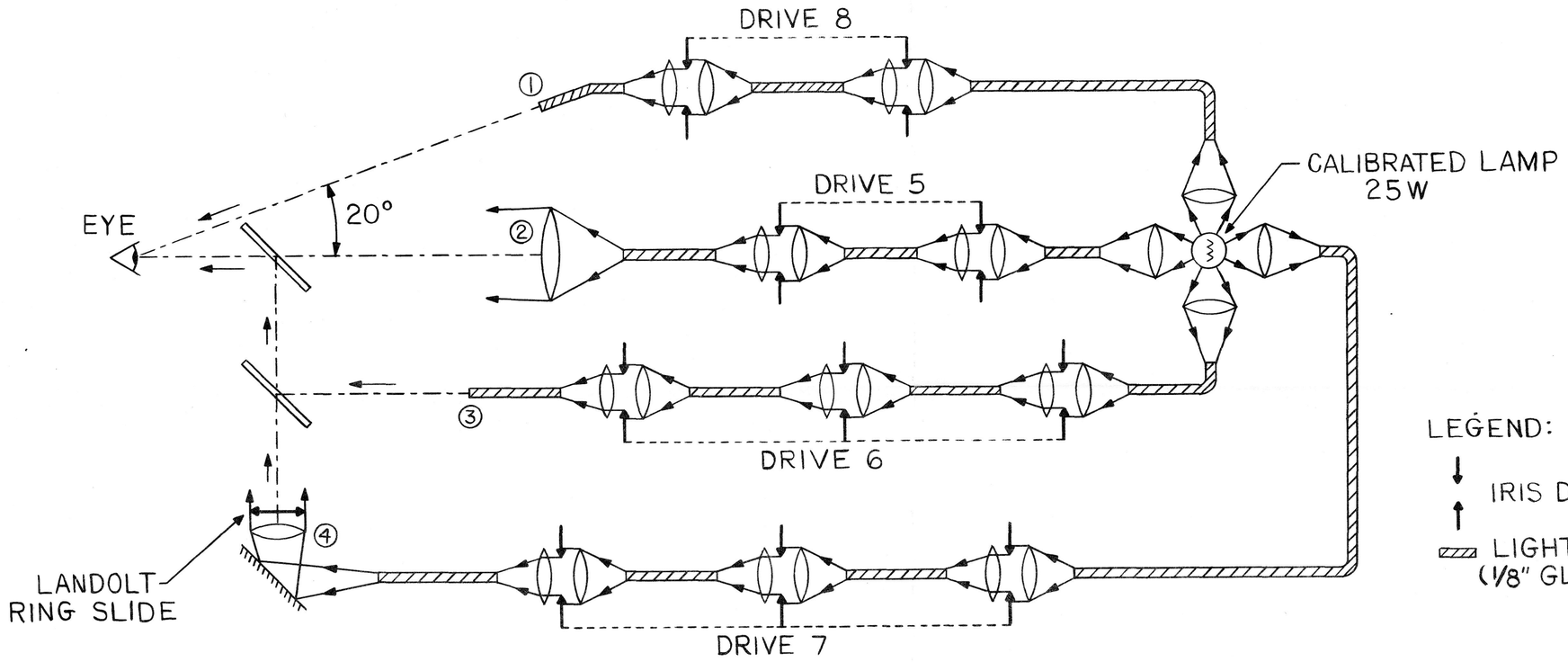
FN-604-F D-68
PRINTED IN U.S.A.

SIZE		REV
C	ER47C220734	–

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED

MEASUREMENTS: DARK ADAPTATION/ BRIGHTNESS THRESHOLD/ PHOTO STRESS



LEGEND:

↓ IRIS DIAPHRAGM

↑ LIGHT PIPE
(1/8" GLASS ROD)

(1) OFF AXIS TEST FIELD - 1°, WHITE, 10^{-6} - 10^{-1} mℓ
(2) PRE-ADAPTION FIELD - 30°, WHITE, 5 - 5000 mℓ
(3) FIXATION FIELD - 1°, RED, 10^{-6} - 10^{2} mℓ
(4) TEST FIELD - 10°, WHITE, 10^{-6} - 10^{2} mℓ

47C220734	47E220736G3
DWG. NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN P.A. Moran	5	10	70
CHECKED	7	10	70
RELEASED PCER	10	11	70
ENGRG			
	7	10	70
PROJ.	7	10	70
R.T. DiGuglielmo	9	10	70

GENERAL ELECTRIC
SPACE SYSTEMS ~~DEPT~~ LOC PHILA. PA.

PRELIMINARY

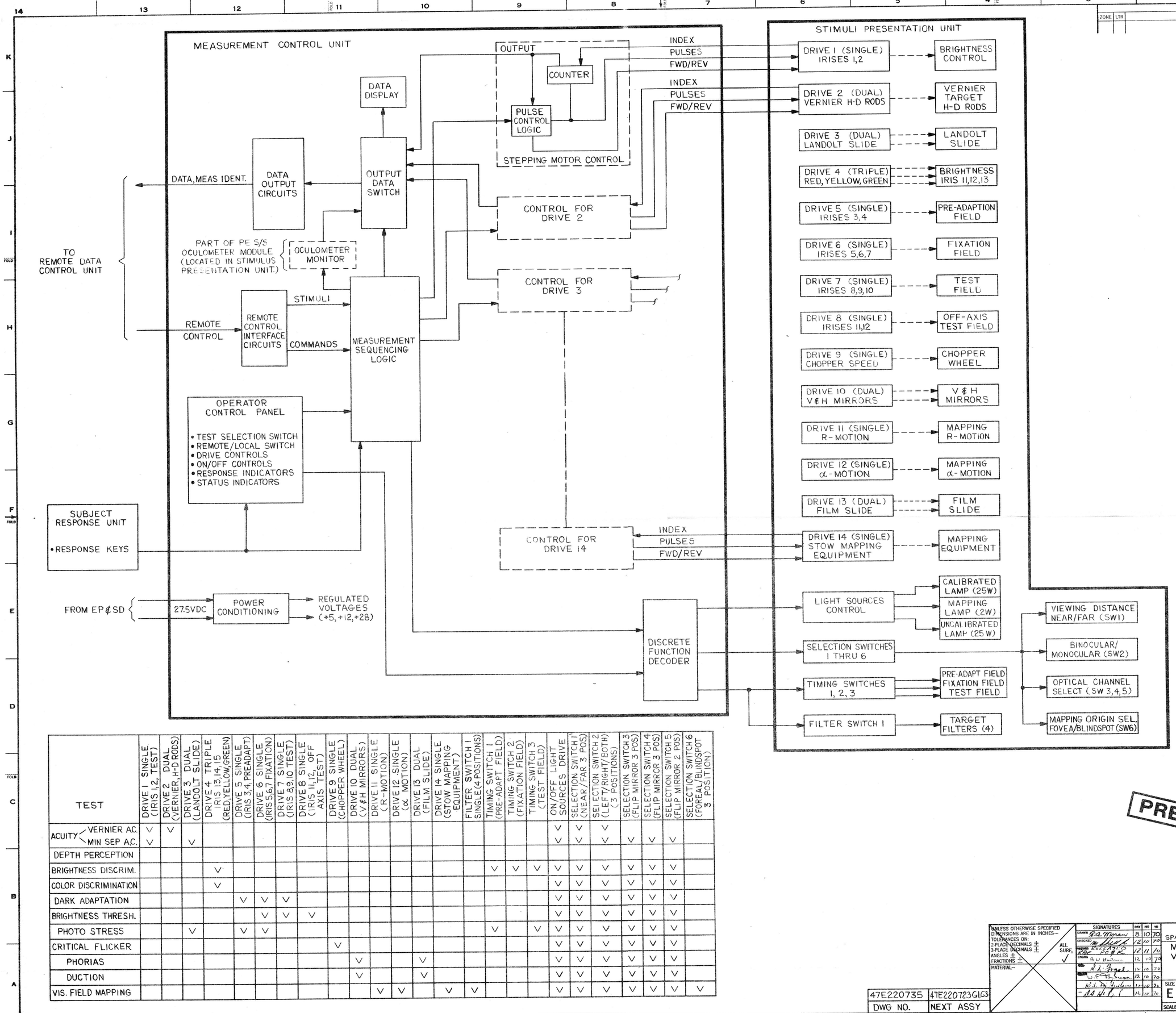
TYPICAL OPTICAL SCHEMATIC
VISION TEST
PE S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
C	23991	ER47C220734

SCALE — SHEET 1 OF 1

DIST TO

FN 903-F (3-68)
PRINTED IN U.S.A.



TEST	DRIVE 1 SINGLE (IRIS 1,2, TEST)	DRIVE 2 DUAL (VERNIER, H-D RODS)	DRIVE 3 DUAL (LANDOLT SLIDE)	DRIVE 4 TRIPLE IRIS 13,14,15 (RED, YELLOW, GREEN)	DRIVE 5 SINGLE (IRIS 3,4, PREADAPT)	DRIVE 6 SINGLE (IRIS 5,6,7 FIXATION)	DRIVE 7 SINGLE (IRIS 8,9,10 TEST)	DRIVE 8 SINGLE (IRIS 11,12, OFF AXIS TEST)	DRIVE 9 SINGLE (CHOPPER WHEEL)	DRIVE 10 DUAL (V&H MIRRORS)	DRIVE 11 SINGLE (R-MOTION)	DRIVE 12 SINGLE (α MOTION)	DRIVE 13 DUAL (FILM SLIDE)	DRIVE 14 SINGLE (STOW MAPPING EQUIPMENT)	FILTER SWITCH 1 SINGLE (4 POSITIONS)	TIMING SWITCH 1 (PRE-ADAPT FIELD)	TIMING SWITCH 2 (FIXATION FIELD)	TIMING SWITCH 3 (TEST FIELD)	ON/OFF LIGHT SOURCES DRIVE	SELECTION SWITCH 1 (NEAR/FAR 3 POS)	SELECTION SWITCH 2 (LEFT/RIGHT/BOTH) (3 POSITIONS)	SELECTION SWITCH 3 (FLIP MIRROR 3 POS)	SELECTION SWITCH 4 (FLIP MIRROR 3 POS)	SELECTION SWITCH 5 (FLIP MIRROR 2 POS)	SELECTION SWITCH 6 (FOREAL/BLINDSPOT 3 POSITION)
ACUITY / VERNIER AC.	V	V																		V	V	V	V	V	V	
ACUITY \ MIN SEP AC.	V		V																	V	V	V	V	V	V	
DEPTH PERCEPTION																				V	V	V	V	V	V	
BRIGHTNESS DISCRIM.				V												V	V	V	V	V	V	V	V	V	V	
COLOR DISCRIMINATION				V															V	V	V	V	V	V	V	
DARK ADAPTATION					V	V	V												V	V	V	V	V	V	V	
BRIGHTNESS THRESH.						V	V	V											V	V	V	V	V	V	V	
PHOTO STRESS			V		V	V										V		V	V	V	V	V	V	V	V	
CRITICAL FLICKER									V										V	V	V	V	V	V	V	
PHORIAS										V			V						V	V	V	V	V	V	V	
DUCTION										V			V						V	V	V	V	V	V	V	
VIS. FIELD MAPPING											V	V		V	V				V	V	V	V	V	V	V	V

PRELIMINARY

47E220735	47E220723G1G3
DWG NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ±.1 3-PLACE DECIMALS ±.01 ANGLES ±1° FRACTIONS ±1/64 MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN P.A. Moran	8	10	70
CHECKED W. Hall	12	10	70
PROGR. MGR. R.R. Peterson	11	11	70
ENGR. A.W. Hahn	12	10	70
ENGR. R.N. Vogel	12	10	70
ENGR. W.F. Tolman	12	10	70
ENGR. R.J. Yurkiw	12	10	70
ENGR. A.A. Hall	12	10	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT LOC PHILA. PA.

MEASUREMENT SELECTION VISION TEST MODULE PE S/S IMBLMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E220735

SCALE 1/1 | SHEET 1 OF 1

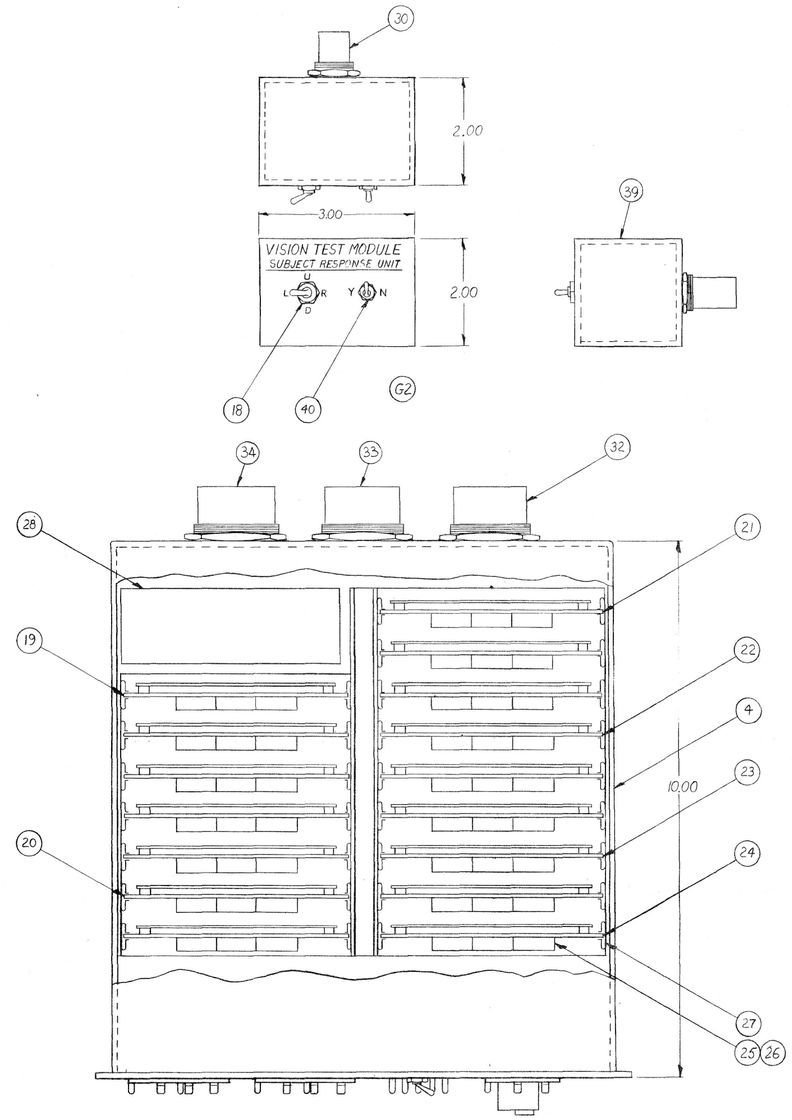
REVISIONS

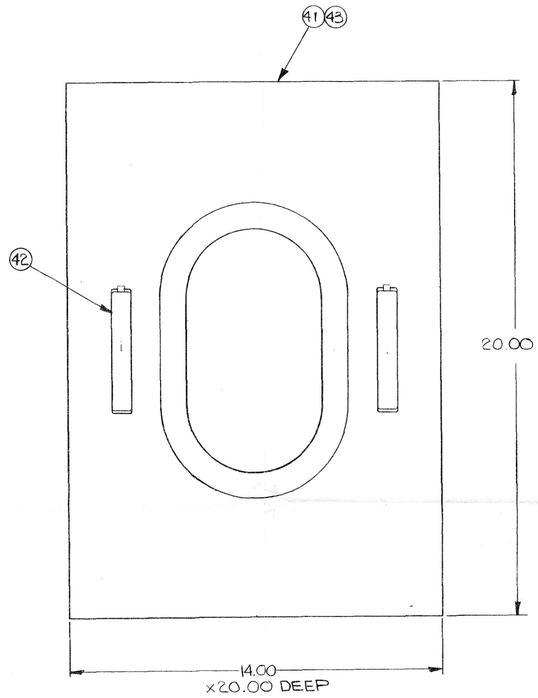
ZONE	LTR	DESCRIPTION	DATE	APPROVED

REV E ER47E220735

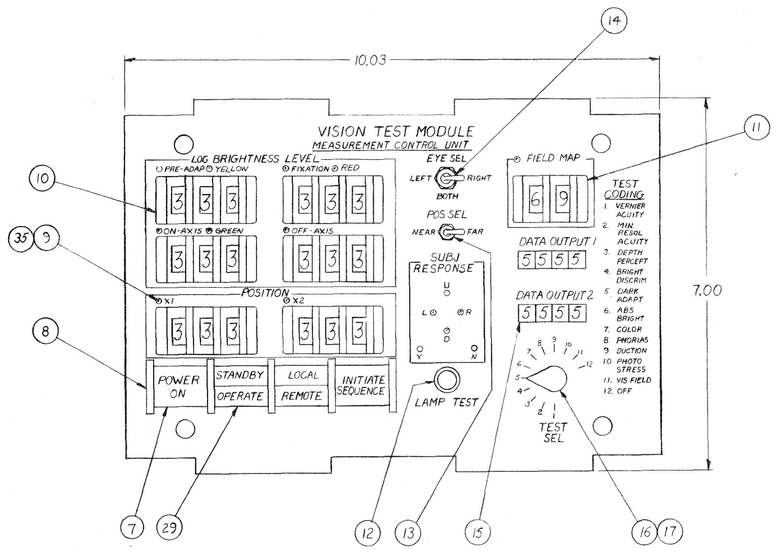
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

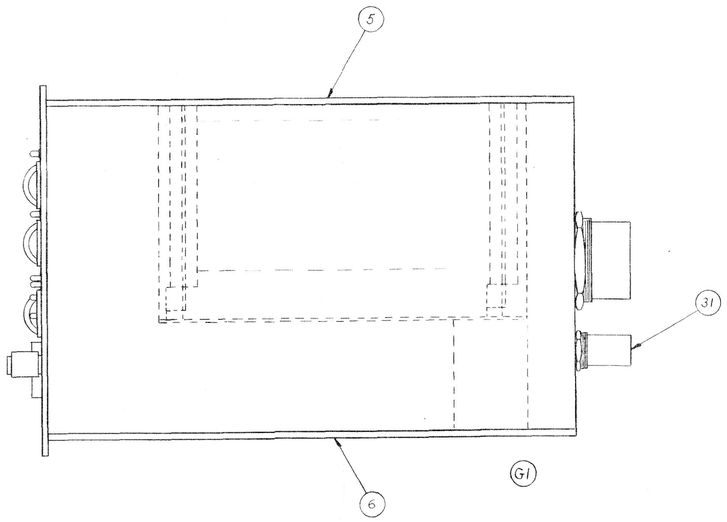
PRELIMINARY





G3 SCALE: 1:2





NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47E220736 G OR P NO. AS APPLICABLE PER 118A1526 CL 21
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

VENDOR NOTES:
- A. MASTER SPECIALTIES CO. COSTA MESA, CALIF.
- B. HEWLETT-PACKARD CO PALO ALTO, CALIF.
- C. CHERRY ELEC PROP CORP HIGHLAND PARK, ILL.
- D. CONTROLS CO. OF AMERICA FOLCROFT, PA.
- E. ALCO ELECTRONIC PRODUCTS, INC. LAWRENCE, MASS.
- F. MONSANTO CO ELEC SPEC PROD CUPERTINO, CALIF.
- G. OAK MFG CO CRYSTAL LAKE, ILL.
- H. THE BIRTCHER CORP MONTEREY PARK, CALIF.
- J. BENDIX ELEC COMP DIV SIDNEY, N.Y.
- K. AMP INC HARRISBURG, PA.
- L. HAYDON SW & INSTR. INC WATERBURY, CONN
- M. SOUTHCO DIV. LION FASTENERS LESTER, PA.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5313	VISION TEST MODULE SPECIFICATION.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s).

2.1.1 VISUAL ACUITY
2.1.2 DEPTH PERCEPTION
2.1.3 BRIGHT THRESHOLD
2.1.4 DARK ADAPTATION
2.1.5 COLOR PERCEPTION
2.1.6 PHORIAS
2.1.7 VISUAL FIELD MAP
2.1.8 CRITICAL FLICKER FUSION
2.1.9 PHOTO STRESS
2.1.0 DUCTION
2.1.11 ABSOLUTE BRIGHTNESS THRESHOLD

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
				REQUIREMENTS PER ASS'Y.		LIST OF MATERIAL	
1				47E222838P16	43	FIXED OCULOMETER UNIT	
2				8940-101-10	42	HANDLE	M
1				47E220747P1	41	STIM. PRESENTATION UNIT	
		1		MST-105G	40	SWITCH, TOGGLE, MOM.	E
		1		47E220736P39	39	CHASSIS	
X		X		47E220685	38	DIAG, SIGNAL FLOW	
X		X		47E220735	37	VISION TEST MEASUREMENT SEL	
X				47C220734	36	SCHEMATIC, OPTICAL	
		15		5082-4409	35	CLIP, MOUNTING	B
		1		LJT07HE-23-35P8	34	CONNECTOR	J
		1		LJT07RE-23-35PA	33	CONNECTOR	J
		1		LJT07RE-23-35P	32	CONNECTOR	J
		1		LJT07RE-9-6P	31	CONNECTOR	J
		1	-	LJT07RE-9-6S	30	CONNECTOR	J
		2		90EA1CAF3J12WL2N1	29	SWITCH, PUSHBUTTON, ILLUM	A
		1		47E220736P28	28	DC-DC CONVERTER	
		32		17B-7-1	27	RETAINER	H
		16		202933-2	26	CONNECTOR	K
		16		202932-2	25	CONNECTOR	K
		1		47E220736P24	24	OUTPUT DATA SWITCH	
		2		47E220736P23	23	DATA OUTPUT CIRCUITS	
		3		47E220736P22	22	REMOTE CONTROL INTERFACE CIRCUITS	
		3		47E220736P21	21	MEASUREMENT SEQUENCE LOGIC	
		2		47E220736P20	20	DISCRETE FUNCTION DECODER	
		5		47E220736P19	19	CONTROL DRIVE CIRCUITS	
		1	-	53574	18	SWITCH, TOGGLE, MOM. 4 POS.	L
		1		MS 91528-0K1B	17	KNOB	
		1		399217A	16	SWITCH, ROTARY	G
		8		MAN1	15	DISPLAY, ALPHA NUMERIC	F
		1		MSTG-206PA	14	SWITCH, TOGGLE	E
		1		MSTG-106D	13	SWITCH, TOGGLE	E
		1		W9601B	12	SWITCH, PUSHBUTTON	D
		1		T20-01M-2	11	SWITCH, THUMBWHEEL	C
		6		T20-01M-3	10	SWITCH, THUMBWHEEL	C
		15		5082-4403	9	LAMP, WHITE	B
		5		90E505	8	BARRIER	A
		2		90EA1C4F3J1WL1N1	7	SWITCH, PUSHBUTTON, ILLUM.	A
		1		47E222826G14	6	COVER, BOTTOM	
		1		47E222826G10	5	COVER, TOP	
		1		47E222826G2	4	MODULE	
X				47E220736G3	3	ASSEMBLY, STIM. PRESS UNIT	
X				47E220736G2	2	ASSEMBLY, SUB RESP UNIT	
X				47E220736G1	1	ASSEMBLY, MEAS CONT UNIT	

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47E220736G2	47E2207000G1
47E220736G1	47E2207000G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN JOHN F KRAIGER	2	10	70
CHECKED [illegible]	24	10	70
[illegible]	14	11	70
ENGR [illegible]	7	11	70
[illegible]	6	11	70
[illegible]	7	11	70
[illegible]	11	11	70

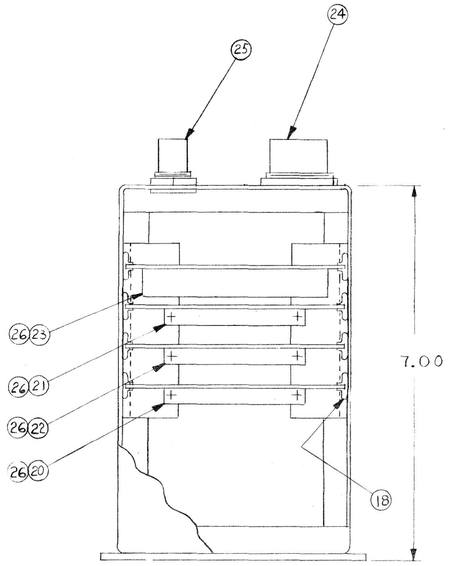
GENERAL ELECTRIC
SPACE SYSTEMS — LOC PHILA PA

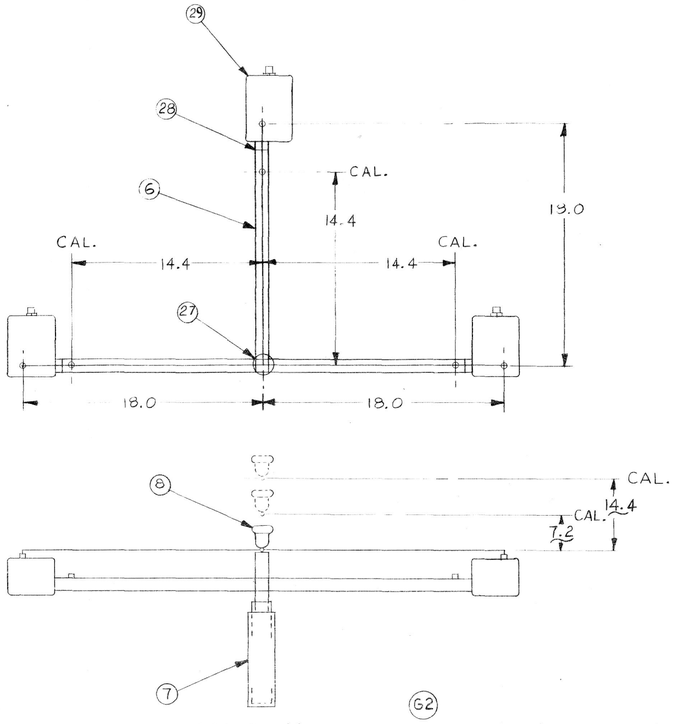
MODULE, ASSY OF VISION TEST PE 7/S
IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220736

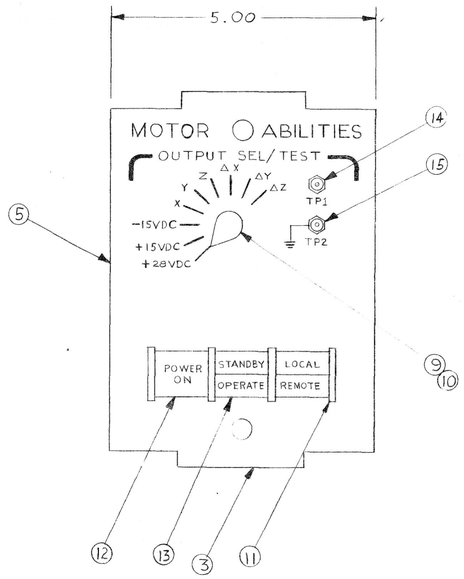
SCALE 1:1 SHEET 1 OF 1

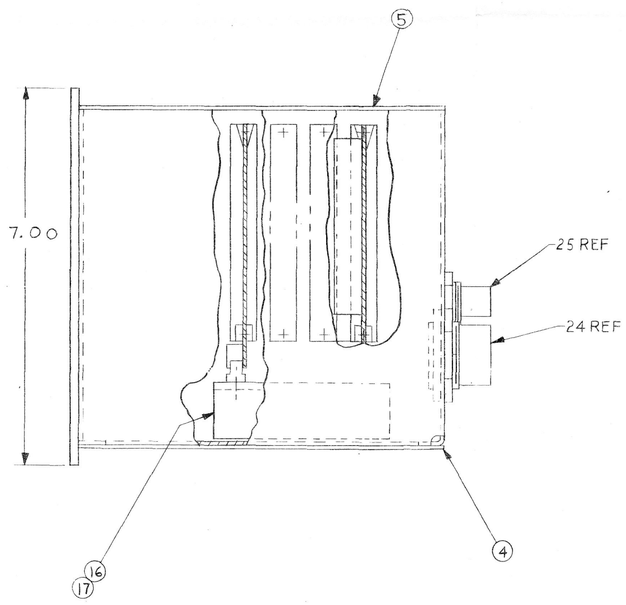
REV 1 ER47E220736 SIZE E
REV 1 ER47E220736 SIZE E
REV 1 ER47E220736 SIZE E





SCALE: 1/4





61

VENDORS NOTES:
A. MASTER SPECIALTIES CO.
COSTA MESA, CALIF.
B. CONTROLS CO. OF AMERICA
FOLCROFT, PA.
C. BENDIX CORP. SIDNEY, N.Y.
D. THE BIRTCHER CORP.
MONTEREY PARK, CALIF.
E. AMP INCORPORATED
HARRISBURG, PA
F. RAPID FRAME INC.
POUGHKEEPSIE, N.Y.
G. OAK MFG. CO.
CRYSTAL LAKE, ILL.

NOTES:
1. INTERPRETATION OF DWG TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47E220737 GROUP NO. OR PART NO. AS APLICABLE PER 18A1526CL21.
3. UNLESS OTHERWISE SPECIFIED ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5322	MOTOR ABILITIES MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s). 2.4.1
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASS'Y.						LIST OF MATERIAL.	
			3	47U216988G1	29	3D DEVICE	
			3	E-1003-2	28	END CONNECTOR	F
			1	D3007-2	27	TEE ADAPTER	F
			4	202933-2	26	CONNECTOR	E
			1	LJT07RE-9-3P	25	CONNECTOR	C
			1	LJT07RE-17-35P	24	CONNECTOR	C
			1	47E220737P23	23	POWER SUPPLY	
			1	47E220737P22	22	"ΔX" "ΔY" "ΔZ" CIRCUIT	
			1	47E220737P21	21	"Z" CIRCUIT	
			1	47E220737P20	20	"X" AND "Y" CIRCUIT	
			X	47D220738	19	DIAG, SIGNAL FLOW	
			8	17B-7-1	18	RETAINER PCB	D
			4	202932-2	17	CONNECTOR	E
			2	47E220737P16	16	BRACKET, ANGLE	
			1	MS16108-3A	15	JACK, TEST	
			1	MS16108-8A	14	JACK, TEST	
			2	90EA1C4F3J2WLSN1	13	SWITCH, ILUMINATED PUSHBUTTON	A
			1	90EA1C4F3J1WLIN1	12	SWITCH, ILUMINATED PUSHBUTTON	A
			4	90E505	11	BARRIER	A
			1	399240A	10	SWITCH, ROTARY	G
			1	MS91528-0K1B	9	KNOB	
				47E220737P8	8	MANIPULANDUM	
			AR	T-1000	7	TELESCOPING TUBE, CALIB.	F
			AR	T-1000	6	TUBING	F
			1	47E222825G3	5	COVER, TOP	
			1	47E222825P13	4	COVER, BOTTOM	
			1	47E222825G1	3	MODULE	
				47E220737G2	2	ASSY, DIST MEAS. UNIT	
				47E220737G1	1	ASSY, CONTROL UNIT	

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES — TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL — ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	15	10	70
CHECKED	29	10	70
ISSUED	14	11	70
ENGRG	28	10	70
MFG	29	10	70
	27	10	70
	29	10	70

GENERAL ELECTRIC
SPACE SYSTEMS MSD LOC PHILA., PA.

MODULE ASSEMBLY OF MOTOR ABILITIES PE S/S IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220737

SCALE 1/1 SHEET 1 OF 1

47E220737G2	47E220696G1
47E220737G1	47E220695G1
PART NO.	NEXT ASSY

USED ON ER47E220737 REV E

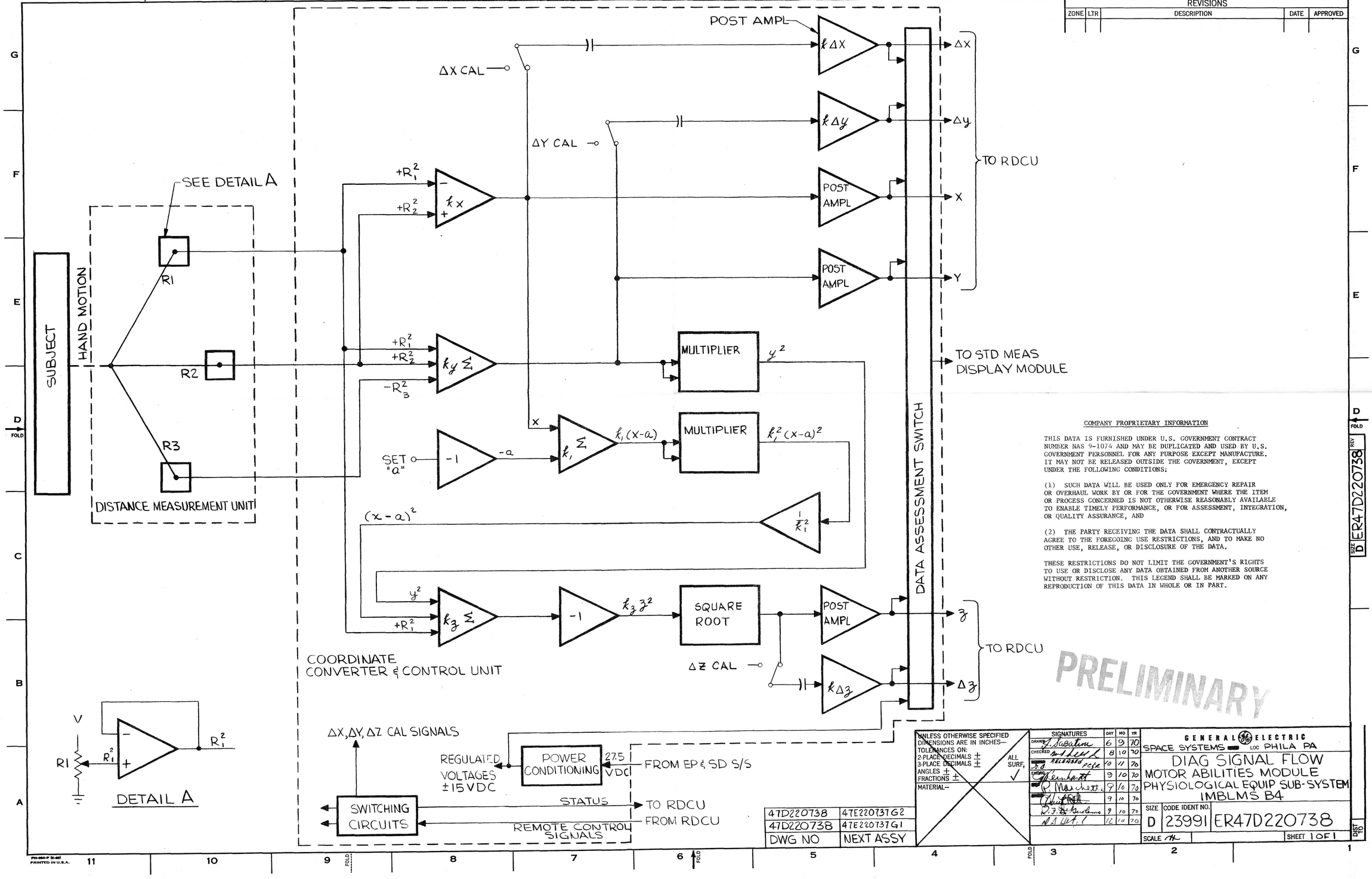
USED ON ER47E220737 REV E

DIST CODE

PRINTED IN U.S.A.

SIZE D | ER47D220738 | REV D

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



COMPANY PROPRIETARY INFORMATION

THIS DATA IS FURNISHED UNDER U.S. GOVERNMENT CONTRACT NUMBER NAS 9-1074 AND MAY BE DUPLICATED AND USED BY U.S. GOVERNMENT PERSONNEL FOR ANY PURPOSE EXCEPT MANUFACTURE. IT MAY NOT BE RELEASED OUTSIDE THE GOVERNMENT, EXCEPT UNDER THE FOLLOWING CONDITIONS:

(1) SUCH DATA WILL BE USED ONLY FOR EMERGENCY REPAIR OR OVERHAUL WORK BY OR FOR THE GOVERNMENT WHERE THE ITEM OR PROCESS CONCERNED IS NOT OTHERWISE REASONABLY AVAILABLE TO ENABLE TIMELY PERFORMANCE, OR FOR ASSESSMENT, INTEGRATION, OR QUALITY ASSURANCE, AND

(2) THE PARTY RECEIVING THE DATA SHALL CONTRACTUALLY AGREE TO THE FOREGOING USE RESTRICTIONS, AND TO MAKE NO OTHER USE, RELEASE, OR DISCLOSURE OF THE DATA.

THESE RESTRICTIONS DO NOT LIMIT THE GOVERNMENT'S RIGHTS TO USE OR DISCLOSE ANY DATA OBTAINED FROM ANOTHER SOURCE WITHOUT RESTRICTION. THIS LEGEND SHALL BE MARKED ON ANY REPRODUCTION OF THIS DATA IN WHOLE OR IN PART.

PRELIMINARY

47D220738	47E220737G2
47D220738	47E220737G1
DWG NO	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN J. Sabatini	6	9	70
CHECKED M. Lee	8	10	70
ENGRG RELEASED per ltr	10	11	70
ENGRG J. Leonhardt	9	10	70
P. Marchetti	9	10	70
	9	10	70
D.F. Schulmeyer	9	10	70
M.A. Wolf	12	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

DIAG SIGNAL FLOW MOTOR ABILITIES MODULE PHYSIOLOGICAL EQUIP SUB-SYSTEM IMBLMS B4

SIZE D | CODE IDENT NO. 23991 | ER47D220738

SCALE 1/4 | SHEET 1 OF 1

DIST TO

PH-684-P (5-68) PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

DAD S/S INTERFACE

ADDRESS LINE → MANCHESTER TO NRZ CONVERTER → ADDRESS INPUT BUFFER (3 LINES; WORD RECOGNITION; Ø2, Ø1) → 10 LINES → ADDRESS STORAGE (10 BITS) → STROBE → 10 LINES → DECOMMUTATION CONTROL WORD ASSOCIATION MEMORY (32 W X 12 BITS) + EQUALITY GATES → 6 LINES → DECODING & DISPLAY CHANNEL CONTROL STORAGE REGISTER

MEMORY ADDRESS LINES; MEMORY DATA STROBE

STROBE; RESET

READY

8 CW / CHANNELS
8 METER / CHANNELS
4 EVENT / CHANNELS
X-Y VECTOR / CHANNELS
8 / DATA LINES
STROBE
ADDRESS / LINES

→ CDC INPUT INTERFACE

MODE CONTROL DATA

DATA LINE → MANCHESTER TO NRZ CONVERTER → DATA INPUT BUFFER (3 LINES; WORD RECOGNITION; Ø2, Ø1)

RESET CLOCK & WORD TIMING RECOVERY → CLOCK Ø1 & Ø2

8 LINES DATA → D/A STROBE CONVERTER → ANALOG / LINE → ANALOG SAMPLE & HOLD CIRCUITS (12)

12 ADDRESS LINES

2 ANALOGS
STROBE
→ METER & STATUS

CONVERSATION & STATUS LINE

TIME CODE & STATUS
ADDRESS 6 LINES
DATA (TIME CODE & STATUS)

8 ANALOGS → ANALOG LOOP RECORDER

2 ANALOGS

MANCHESTER TO NRZ CONVERTER → STATUS INPUT BUFFER (3 LINES; WORD RECOGNITION; Ø2, Ø1) → 8 LINES → MESSAGE RECOGNITION → ADDRESS LINES

2 ANALOGS → ANALOG SWITCH

2 ANALOGS → STRIP CHART RECORDER

TIME CODE

STROBE

DATA

CONTROL

CAD S/S READY

IRIG TIME CODE

MESSAGE RECOGNITION

STROBE; ADDRESS

+1 STROBE
13 CONTROL LINES
→ VDP

+1 STROBE
8 CONTROL LINES
→ VIDEO MIXER

VDP CONTROL

VIDEO MIXER CONTROL GATES

TO IOP → NRZ TO MANCHESTER

DAD S/S READY

CAD S/S SHIFT OUTPUT REGISTER

CONTROL/DATA ROUTING

8 DATA LINES
5 ADDRESS LINES
DATA READY
ACKNOWLEDGE
→ CDC OUTPUT INTERFACE

D.A.M. READY

STROBE

CLOCK

READY
8 DATA LINES
STROBE
→ DIGITAL PRINTER

CLOCK

PRELIMINARY

TYPICAL MESSAGE RECOGNITION CIRCUIT

DATA LINES; WORD STROBE

STX GATE; DELAY; WORD SEPARATION; ETX

S R

WORD ASSEMBLY REGISTER

RESET; ADDRESS

FUNCTION

MEMORY ADDRESS
MEMORY DATA
FUNCTION ADDRESS LINES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES — TOLERANCES ON: 2 PLACE DECIMALS ±; 3 PLACE DECIMALS ±; ANGLES ±; FRACTIONS ±; MATERIAL —

ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	7	10	70
CHECKED	8	10	70
ENGR RELEASE	12	11	70
ENGR	9	11	70
MFG	19	10	70
MFG	9	11	70
MFG	19	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA

DIAGRAM, SIGNAL FLOW
DISPLAY ADAPTER MODULE
CAD S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220739

SCALE NONE — SHEET 1 OF 1

47E220739	47E222803G1
DWG NO.	NEXT ASSY

ER47E220739 REV

ER47E220739 REV

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

VENDOR NOTES:

A. OAK MFG. CO
CRYSTAL LAKE, ILL.

B. MASTER SPECIALTIES CO
COSTA MESA, CALIF.

C. CONTROLS CO OF AMERICA
FOLCROFT, PA.

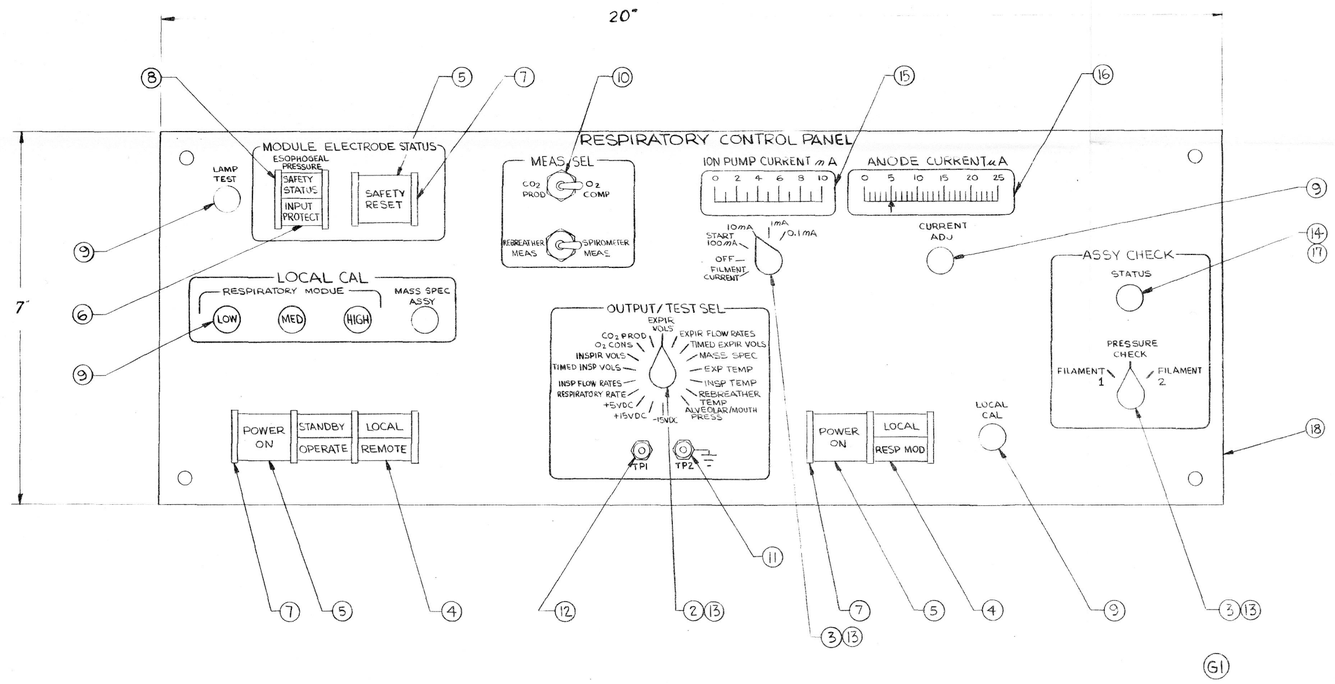
D. ALCO ELECTRONIC PRODUCTS INC.
LAWRENCE, MASS.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5318	RESPIRATORY MODULE SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s). 1.3.1 - RESP RATE 1.3.2 - LUNG VOL & CAP 1.3.3 - TIMED LUNG VOL 1.3.4 - RESP FLOWS 1.3.6 - LUNG COMPLIANCE 1.4.1 - Alv O_2 & CO_2 1.4.2 - DEAD SPACE 1.4.3 - ALV VENT 1.4.4 - RES VOL 1.4.5 - PO_2 & CO_2 MIX VEN BLD 1.4.6 - O_2 CONS 1.4.7 - CO_2 PROD 1.2.12 - C.O. DENISON
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

NOTES:

1. INTERPRETATION OF DWG TERMS AND TOLERANCES PER 118A1664.
2. MARK "GE47E220740" (GROUP OR PART NUMBER AS APPLICABLE) PER 118A1526 CL21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE
4. DELINEATION OF FRONT PANEL ONLY SHOWN HERE. RELATIVE LOCATIONS AND VENDOR IDENTIFICATION DATA FOR MAJOR FUNCTIONAL ASSEMBLIES ARE SHOWN IN G.E. DWG. 47E220705. CONTROL & LOGIC DEFINITON PER G.E. DWG. 47E220767.



PRELIMINARY

	X	47E220767	20	DIAG, SIGNAL FLOW	
	X	47D220705	19	DIAG, SCHEMATIC, MECH	
	1	47E220740P18	18	PANEL	
	1	MS25237-327	17	BULB	
	1	47E220740P16	16	AMMETER u AMP	
	1	47E220740P15	15	AMMETER m AMP	
	1	MS25256-4	14	LIGHT, INDICATOR, GREEN	
	3	MS91528-0K1B	13	KNOB	
	1	MS16103-3A	12	TEST JACK (YELLOW)	
	1	MS16103-3A	11	TEST JACK (BLACK)	
	2	MSTG-106E	10	SWITCH, TOGGLE	D
	7	W9601-B	9	SWITCH, PUSH BUTTON	C
	2	90E501	8	BARRIER	B
	9	90E505	7	BARRIER	B
	1	90EA1K4F3.1BRW13N1	6	SWITCH, ILLUMINATED PUSH BUTTON	B
	3	90EA1K4F3.1WL1N1	5	SWITCH, ILLUMINATED PUSH BUTTON	B
	3	90EA1K4F3.1ZWL2N1	4	SWITCH, ILLUMINATED PUSH BUTTON	B
	2	399223A	3	SWITCH, ROTARY	A
	1	399658MF	2	SWITCH, ROTARY	A
	X	47E220740G1	1	ASSEMBLY	
G4 G3 G2 G1 REQUIREMENTS PER ASS'Y.		IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE

LIST OF MATERIAL

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN		11	70
CHECKED		11	70
RELEASED		11	70
ENGR		11	70
MFR		11	70
MANAGER		11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

PANEL, CONTROL
RESPIRATORY
P.E. SUB SYSTEM
IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220740

SCALE 1:1 SHEET 1 OF 1

47E220740G1	47E220698G1
PART NO	NEXT ASSY

REV E ER47E220740

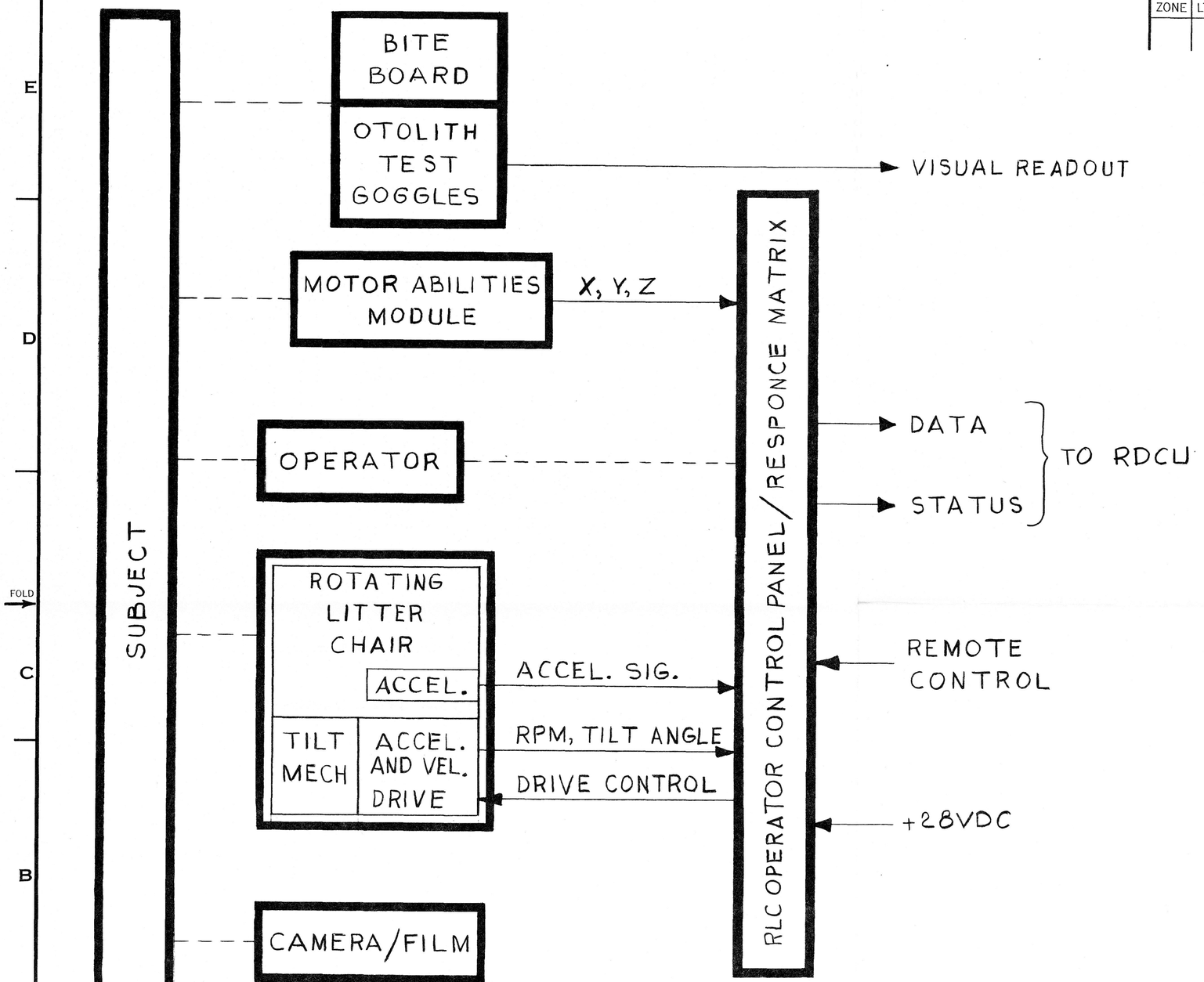
REV E ER47E220740

DSBT 70

SIZE	ER47C220741	REV
C		

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED



PRELIMINARY

47C220741	47E220745G1
DWG NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN Howard C. Thom	16	10	70
CHECKED [illegible]	16	10	70
RELEASED PCER	10	11	70
ENGRG [illegible]	16	10	70
[illegible]	16	10	70
[illegible]	16	10	70

GENERAL ELECTRIC
SPACE SYSTEMS — LOC. PHILA, PA

SIGNAL FLOW DIAGRAM ROTATING LITTER CHAIR PE S/S IMBLMS B4

SIZE	CODE IDENT NO.	
C	23991	ER47C220741

SCALE NONE — SHEET 1 OF 1

DIST TO

FN903 F (11-68)
PRINTED IN U. S. A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

SUBJECT

RIGHT LEG

LEFT LEG

SENSORS

PREAMPS

POSTAMPLIFIERS

S&H

TO ALL PREAMPLIFIERS

CALIBRATE

TO ALL S&H'S

SAMPLE & HOLD SWITCH

CALIBRATE

LOCAL/REMOTE

DC/DC CONVERTER

DATA ASSESSMENT SWITCH

SENSOR SUBASSEMBLY

CONTROL SUBASSEMBLY

RL A CIRCUMFERENCE
RL A ΔC
RL B CIRCUMFERENCE
RL B ΔC
RL C CIRCUMFERENCE
RL C ΔC
RL D CIRCUMFERENCE
RL D ΔC
RL E CIRCUMFERENCE
RL E ΔC
RL F CIRCUMFERENCE
RL F ΔC
RL G CIRCUMFERENCE
RL G ΔC
RL H CIRCUMFERENCE
RL H ΔC
RL I CIRCUMFERENCE
RL I ΔC
RL J CIRCUMFERENCE
RL J ΔC

TO RDCU

+28VDC — FROM EP&SD TO SMDM

TEST POINT

REMOTE CONTROL

LL A CIRCUMFERENCE
LL A ΔC
LL B CIRCUMFERENCE
LL B ΔC
LL C CIRCUMFERENCE
LL C ΔC
LL D CIRCUMFERENCE
LL D ΔC
LL E CIRCUMFERENCE
LL E ΔC
LL F CIRCUMFERENCE
LL F ΔC
LL G CIRCUMFERENCE
LL G ΔC
LL H CIRCUMFERENCE
LL H ΔC
LL I CIRCUMFERENCE
LL I ΔC
LL J CIRCUMFERENCE
LL J ΔC

TO RDCU

PRELIMINARY

47E220742	47E220743 G1
DRAWING NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES		DAY	MO	YR
DRAWN	D. Lee	22	10	70
CHECKED		09	10	70
ENGR APPROV		12	11	70
MFG APPROV		28	10	70
QUALITY		29	10	70
PROJECT MGR		29	10	70
CONTRACT ADMIN				

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

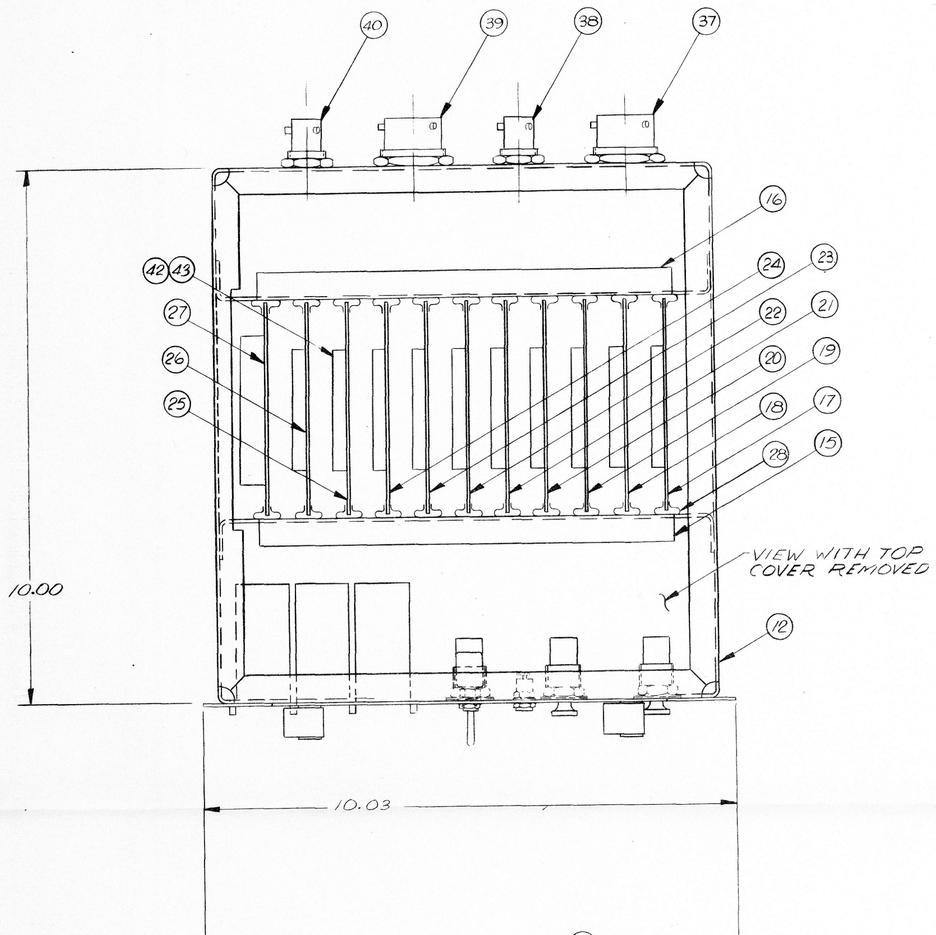
DIAGRAM, SIGNAL FLOW
PLETHYSMOGRAPH MODULE
PE S/S IMBLMS B4

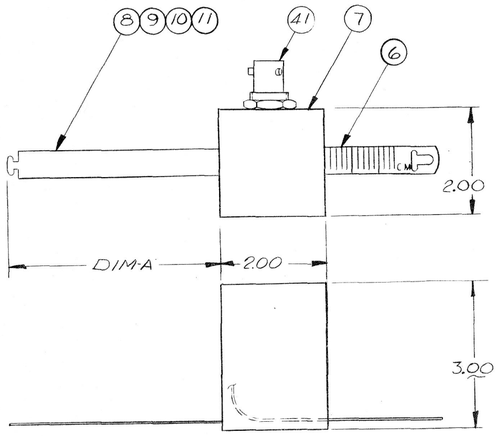
SIZE	CODE IDENT NO.	
E	23991	ER47E220742

SCALE NONE SHEET 1 OF 1

REV E ER47E220742

PRINTED IN U.S.A.





G_NO.	P_NO	DIM A
G2	P8	4.00
G3	P9	10.00
G4	P10	14.00
G5	P11	19.00

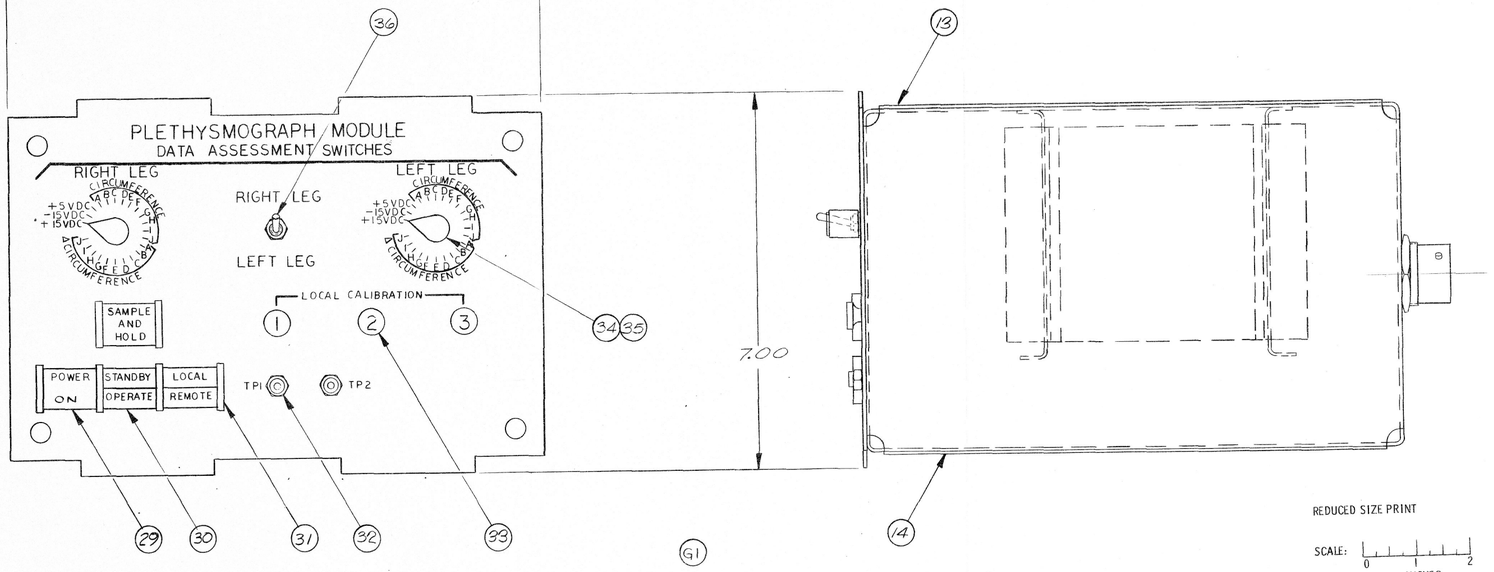
NOTES:
1. INTERPRETATION OF DRAWING TERMS & TOLERANCES PER 11BA1664
2. MARK GE47E220743 GROUP NO. OR PART NO. AS APPLICABLE PER 11BA1526 CL 21
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE

VENDOR NOTES:
A. THE BIRTCHER CORP. MONTEREY PARK, CALIF
B. MASTER SPECIALTIES CORP COSTA MESA, CALIF
C. CONTROLS CO. OF AMERICA FOLCROFT, PA
D. ALCO ELECTRONIC PRODUCTS INC LAWRENCE, MASS
E. OAK MFG CO. CRYSTAL LAKE, ILL
F. BENDIX ELECTRIC COMP. DIV. SIDNEY, N.Y.
G. AMP INC. HARRISBURG, PA

PRELIMINARY

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5319	PLETHYSMOGRAPH MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s). 1-2-9-LIMB PLETHYS
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.



REDUCED SIZE PRINT

SCALE: 0 2 INCHES

REQUIREMENTS PER ASS'Y. G5	G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
				X	MTE220742	44	DIAGRAM, SIGNAL FLOW	
–	–	–	–	11	2009392-2	43	CONNECTOR	G
–	–	–	–	11	2009393-2	42	CONNECTOR	G
1	1	1	1	–	MJTOTRE7-65A	41	CONNECTOR	F
–	–	–	–	1	MJTOTRE7-6PA	40	CONNECTOR	F
–	–	–	–	1	MJTOTRE17-26	39	CONNECTOR	F
–	–	–	–	1	MJTOTRE9-6P	38	CONNECTOR	F
–	–	–	–	1	MJTOTRE-17-35	37	CONNECTOR	F
–	–	–	–	1	MS16106D	36	SWITCH, TOGGLE	D
–	–	–	–	2	3996539MF	35	SWITCH, ROTARY	E
–	–	–	–	2	MS90280K16	34	KNOB	
–	–	–	–	3	W9601-B	33	SWITCH, PUSH BUTTON	C
–	–	–	–	2	MS16108-8A	32	TEST JACK	
–	–	–	–	6	90E505	31	BARRIER	B
–	–	–	–	2	90EA1CAT3JWH2W	30	SWITCH, ILLUMINATED PUSH BUTTON	B
–	–	–	–	2	90EA1CAT3JWH1N1	29	SWITCH, ILLUMINATED PUSH BUTTON	B
–	–	–	–	22	17B-7-1	28	RETAINER, PCB	A
–	–	–	–	1	47E220743P27	27	DC-DC CONVERTER	
–	–	–	–	1	P26	26	POSTAMPLIFIER & AC CIRCUITS	
–	–	–	–	1	P25	25		
–	–	–	–	1	P24	24		
–	–	–	–	1	P23	23		
–	–	–	–	1	P22	22		
–	–	–	–	1	P21	21		
–	–	–	–	1	P20	20		
–	–	–	–	1	P19	19		
–	–	–	–	1	P18	18		
–	–	–	–	1	P17	17	POSTAMPLIFIER & AC CIRCUITS	
–	–	–	–	1	P16	16	STRUT	
–	–	–	–	1	47E220743P15	15	STRUT	
–	–	–	–	1	47E220743G14	14	BOTTOM COVER	
–	–	–	–	1	47E220743G13	13	TOP COVER	
–	–	–	–	1	47E220743G12	12	MODULE	
1	–	–	–	–	47E220743P11	11	STRAP 19.00 IN.	
–	1	–	–	–	P10	10	STRAP 14.00 IN.	
–	–	1	–	–	P9	9	STRAP 10.00 IN.	
–	–	–	1	–	P8	8	STRAP 4.00 IN.	
1	1	1	1	–	P7	7	CASE	
1	1	1	1	–	P6	6	TAPE	
X	–	–	–	–	G5	5	ASSEMBLY, SENSOR	
–	X	–	–	–	G4	4	ASSEMBLY, SENSOR	
–	–	X	–	–	G3	3	ASSEMBLY, SENSOR	
–	–	–	X	–	G2	2	ASSEMBLY, SENSOR	
–	–	–	–	X	47E220743G1	1	ASSEMBLY, CONTROL	

LIST OF MATERIAL

47E220743G5		
47E220743G4		
47E220743G3	47E220698G1	
47E220743G2		
47E220743G1		
PART NO	NEXT ASSY	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ± ALL SURF ✓
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—

SIGNATURES	DAY	MO	YR
DRAWN P.T. MARSH	22	10	70
CHECKED	27	10	70
ISSUED PTI ASSD	14	11	70
CHKD	28	10	70
ENGR			
MFG R.D. Hartung	29	10	70
QUAL	27	10	70
PROJ W.W. Crockett	29	10	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT. 100 PHILA., PA

MODULE, ASSY OF PLETHYSMOGRAPH PE S/S IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220743

SCALE 1/1 SHEET 1 OF 1

REVISIONS

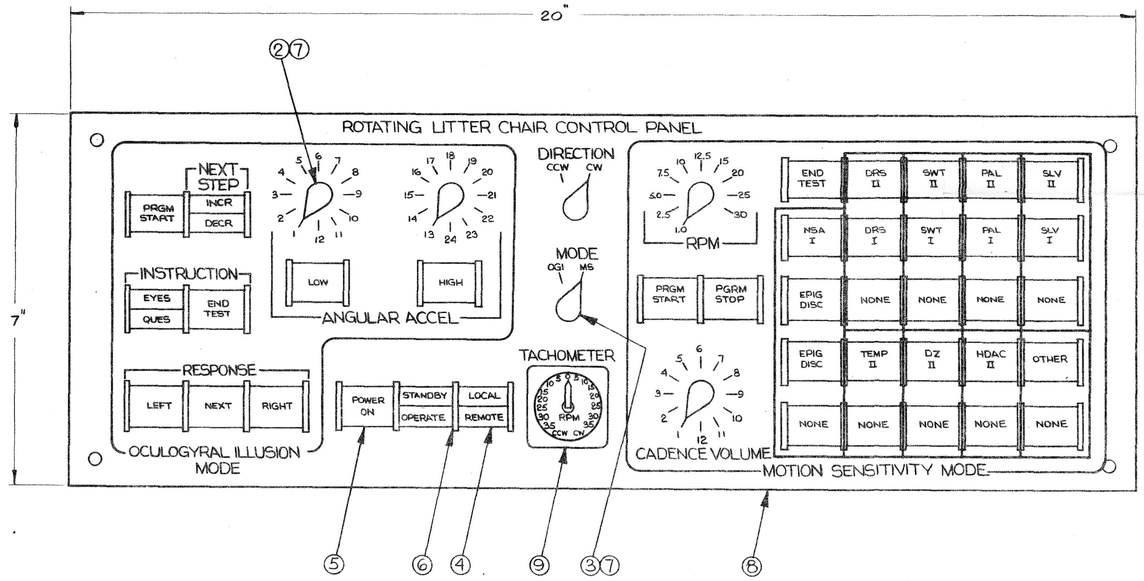
ZONE	LTR	DESCRIPTION	DATE	APPROVED

REV E ER47E220743 REV E ER47E220743 REV E ER47E220743

PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

NOTES
1. INTERPRETATION OF DRAWING TERMS & TOLERANCES PER 118A1664.
2. MARK "GE47E220746" (GROUP OR PART NO. AS APPLICABLE) PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. DELINEATION OF FRONT PANAL ONLY SHOWN HERE CONTROL PACKAGING CONFIGURATION TO BE SIMILAR TO THAT DEFINED BY – APL/JHU DWGS. 7214-5004 & 7214-5000
5. FOR ROTATING LITTER CHAIR DETAILS SEE APL/SHU DWGS. 7214-3000 & 7214-9000



THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5312	ROTATING LITTER CHAIR MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (S). – SEE BELOW
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

1.1.4 AGRAVIC PERCEP.
1.1.5 OCULAR COUNT ROLL
1.1.6 O G I
1.1.7 ANG. ACCEL THRESH
1.1.9 COR. SICK SUSCEP.

PRELIMINARY

VENDOR NOTES
A. OAK MFG CO. CRYSTAL LAKE, ILL
B. MASTER SPECIALTIES CO COSTA MESA, CALIF
C. SOUTHWEST RESEARCH INSTITUTE

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENT PER ASSY						LIST OF MATERIAL	
1				SEE NOTE	9	TACHOMETER	C
1				47E220746P8	8	PANEL	
6				MS91528-0K1B	7	KNOB	
51				90E505	6	BARRIER	B
35				90EA1C4F3J1WL1N1	5	SWITCH, ILLUMINATED PUSHBUTTON	B
4				90EA1C4F3J2WL2N1	4	SWITCH, ILLUMINATED PUSHBUTTON	B
2				399223A	3	SWITCH, ROTARY	A
4				399659MF	2	SWITCH, ROTARY	A
X				47E220746G1	1	ASSEMBLY, PANEL	

REDUCED SIZE PRINT
SCALE: 0 1 2 INCHES

47E220746G1	47E220698G1
PART NO	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	20	11	70
CHECKED	20	11	70
ENGR LDR	21	11	70
ENGR	24	11	70
MFR	24	11	70
MANUF	30	11	70

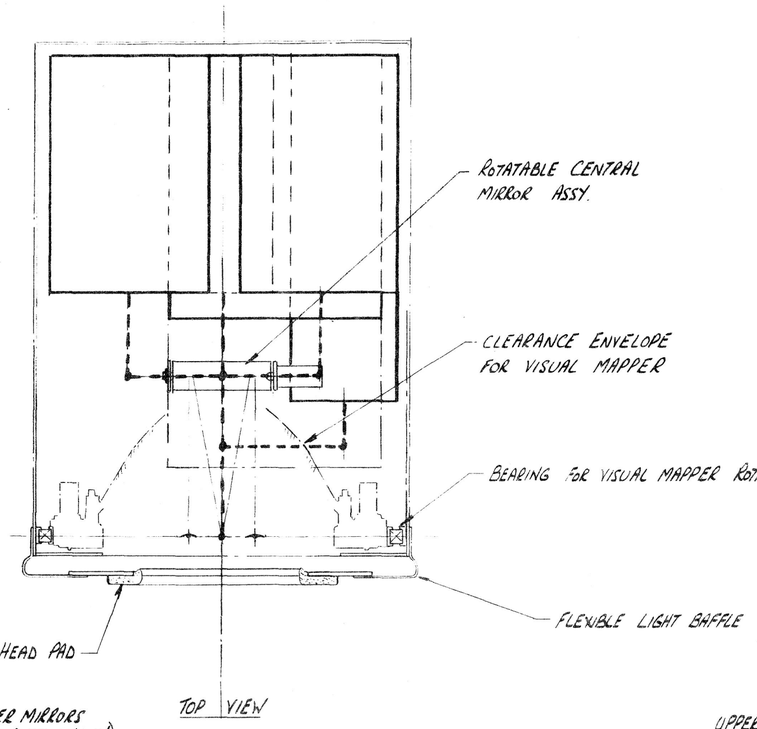
GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA
RLC CONTROL PANEL ASSEMBLY OF PE S/S IMBLMS B4

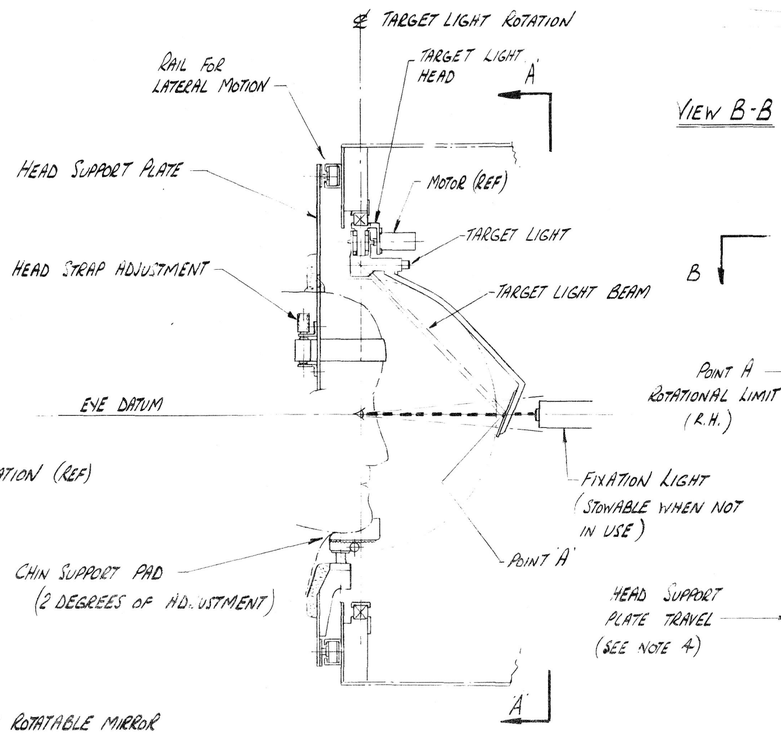
SIZE	CODE IDENT NO.	
E	23991	ER47E220746

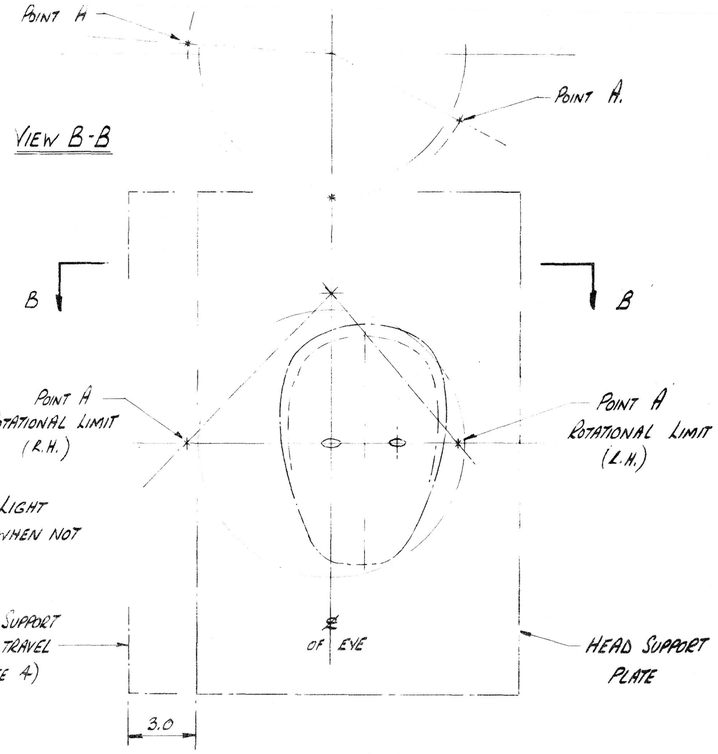
SCALE 1/1 SHEET 1 OF 1

REV E ER47E220746

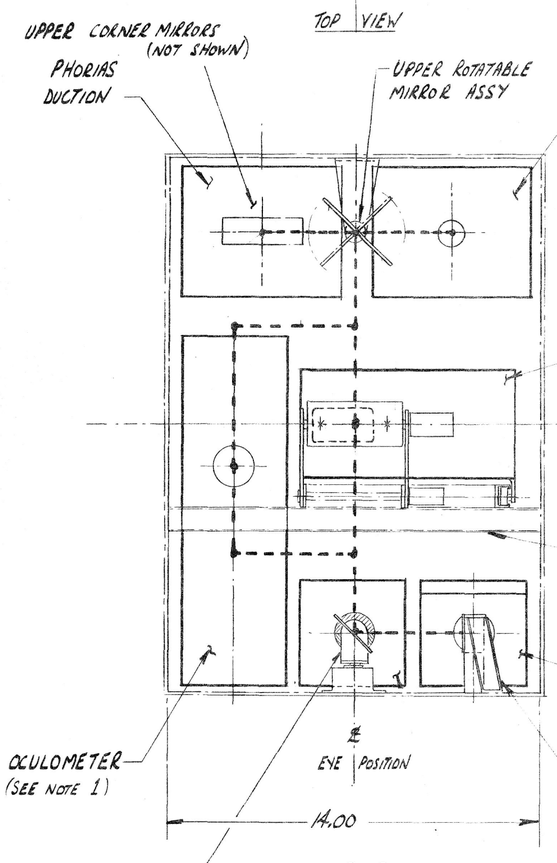
PRINTED IN U.S.A.





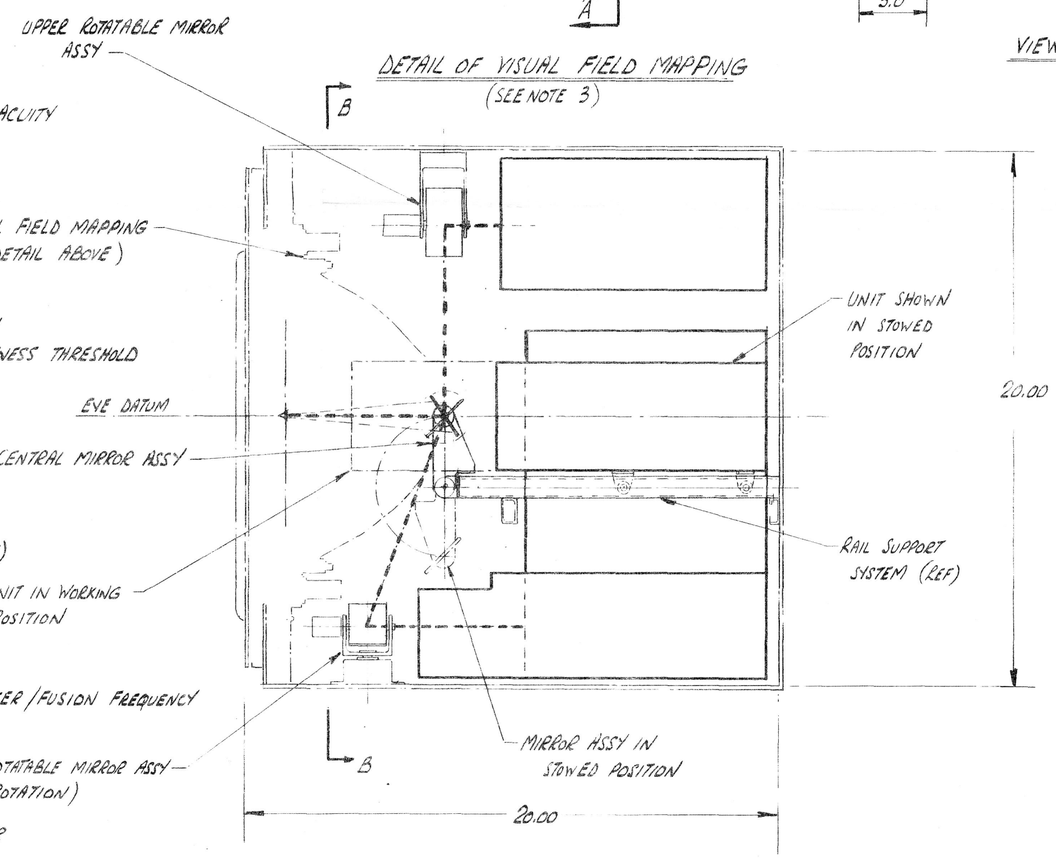


VIEW A-A



VIEW B-B

BRIGHTNESS DISCRIMINATION
COLOR PERCEPTION



SIDE VIEW

DETAIL OF VISUAL FIELD MAPPING
(SEE NOTE 3)

PRELIMINARY

NOTES

1. OCULOMETER MIRRORS, PHORIAS/DUCTION ADJUSTABLE MIRRORS AND INTERNAL LIGHT SOURCES ARE NOT SHOWN FOR CLARITY.
2. DARK ADAPTATION UNIT SLIDES INTO POSITION DURING EXPERIMENT CENTRAL MIRROR ASSY STOWS DOWN DURING THIS MANOEUVER
3. VISUAL FIELD MAPPING EXPERIMENT
   (a) TARGET LIGHT HEAD ROTATES 360° AROUND HEAD POSITION
   (b) TARGET (POINT 'A') ROTATES 160°
   (c) TARGET LIGHT SHOWN IN ON-AXIS POSITION
   (d) TWO (2) OFF-AXIS FIXATION LIGHTS (FOR BLIND SPOT MAPPING) NOT SHOWN.
4. HEAD PLATE TRANSLATES SIDEWAYS (±1.50) FOR MONOCULAR OR BINOCULAR VISION TESTING.

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47E220741 P1	47E220736G3
DWG. NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
ALL SURF ✓
MATERIAL

SIGNATURES			
DRAWN		3/11	70
CHK		1	12 70
ENGR		5	12 70
MFG		30	11 70
		3	11 70
		2	12 71
		2	12 71

GENERAL ELECTRIC
SPACE SYSTEMS DEPT. LOC. ANAHEIM

STIMULUS PRESENTATION UNIT
VISION TESTER
IMEMS 84

SIZE E | CODE IDENT NO 23991 | ER 47E220747

SCALE 1/4

PRELIMINARY

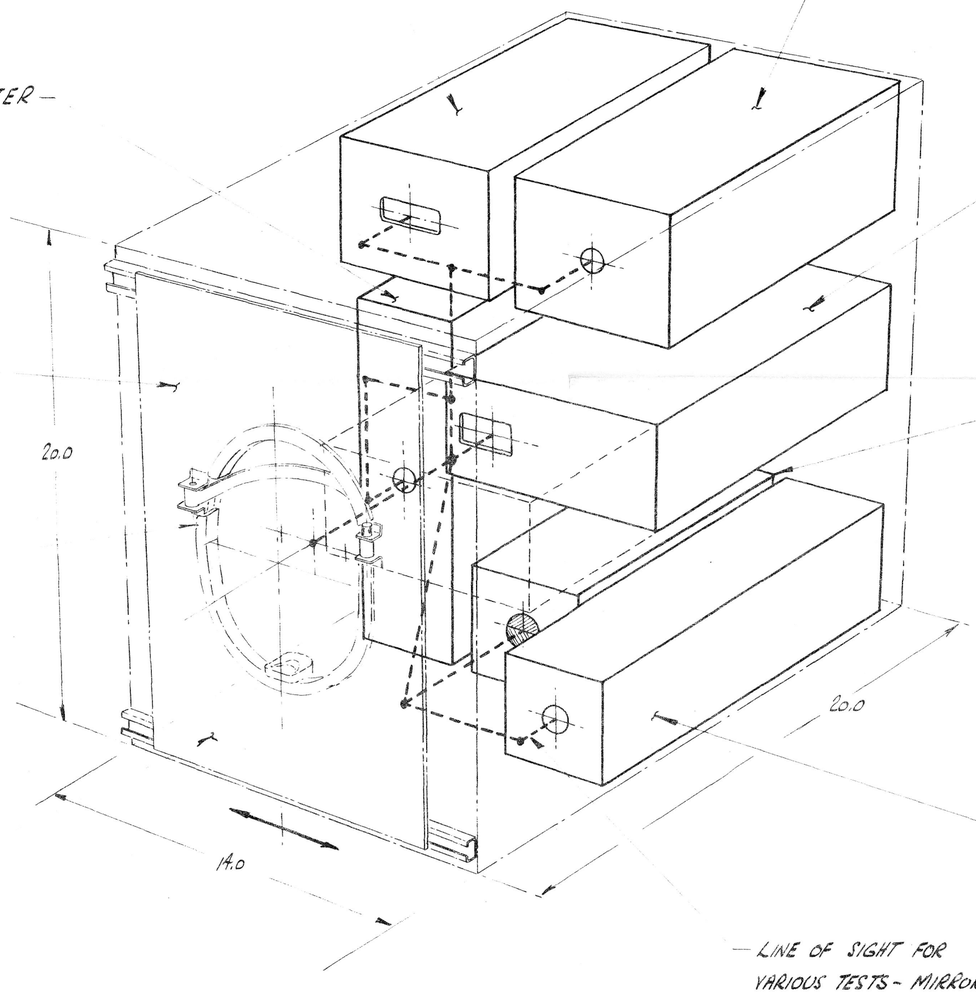
PHORIAS
DUCTION —

— VISUAL ACUITY
VERNIER ACUITY
MIN. SEPARABLE ACUITY
DEPTH PERCEPTION

OCULOMETER —

— DARK ADAPTATION
ABSOLUTE BRIGHTNESS THRESHOLD
PHOTO STRESS
(UNIT SHOWN IN STOWED POSITION
MOVES FORWARD 5.5 INS WHEN IN USE)

VISUAL FIELD MAPPING —
(NOT SHOWN FOR CLARITY)



— BRIGHTNESS DISCRIMINATION
COLOR PERCEPTION

HEAD SUPPORT —
(REF)

NOTE.

1. EACH ENCLOSURE SHOWN IS LIGHT TIGHT AND CONTAINS ALL NECESSARY OPTICAL AND MECHANICAL COMPONENTS (LENSES, DIAPHRAGMS AND DRIVES) TO CARRY OUT THE INDICATED TESTS.

— CRITICAL FLICKER/FUSION FREQUENCY

HEAD PLATE —
PLATE TRANSLATES ± 1.5" FOR
MONOCULAR OR BINOCULAR
VISION TESTING

— LINE OF SIGHT FOR
VARIOUS TESTS - MIRRORS
NOT SHOWN FOR CLARITY

REDUCED SIZE PRINT
SCALE: 0 INCHES 2

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES—
TOLERANCES ON
2 PLACE DECIMALS ± ALL SURF
3 PLACE DECIMALS ±
ANGLES ±
FRACTIONS ± ✓
MATERIAL—

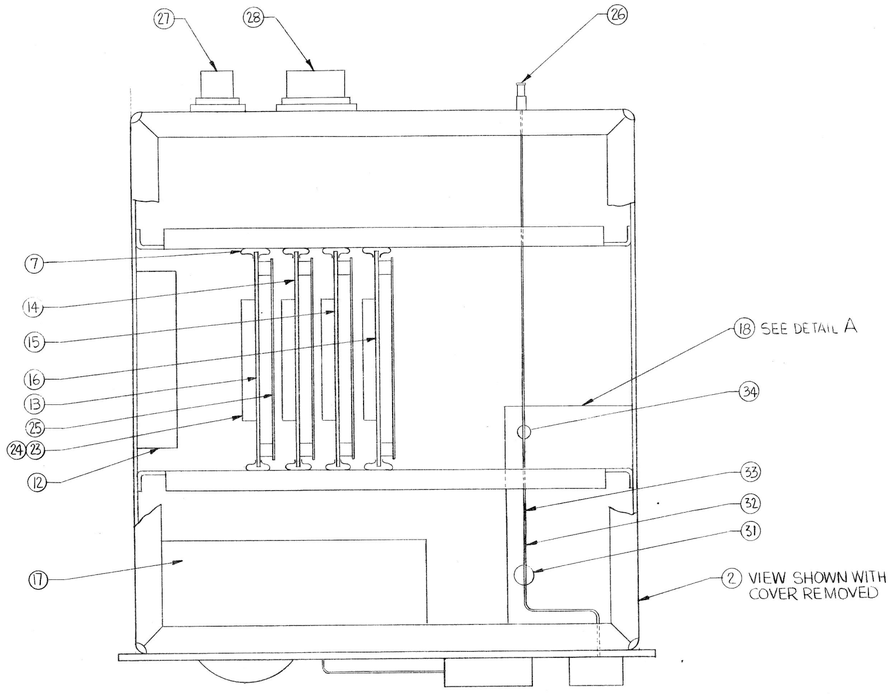
SIGNATURES		MO	YR
DRAWN		30	11 70
CHK'D		1	12 70
ENGR		5	12 70
MFG		30	11 70
		2	12 70
		4	12 70
		2	12 70
		2	12 70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT PHILA. PA
STIMULUS PRESENTATION UNIT
VISION TESTER
IMABLMS 84

SIZE	CODE IDENT NO	
E	23991	ER47E220747

SCALE SHEET

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



VENDOR NOTES:

A. OAK MFG CO, CRYSTAL LAKE, ILL.
B. MASTER SPECIALTIES CO, COSTA MESA, CALIF.
C. RAYTHEON CO IND. COMP. OPERATION QUINCY, MASS.
D. CONTROL CO OF AMERICA FOLCROFT, PA.
E. AMP. CORP, HARRISBURG, PA.
F. BENDIX ELEC. PROD. DIV, SIDNEY, N.Y.
G. THE BIRTCHER CORP. MONTEREY PARK, CALIF.
H. THE GENERAL ELECTRIC CO — (SIMILAR TO COMMERCIAL UNIT CURRENTLY UNDER DEVELOPEMENT)
MEDICAL DEVELOPMENTS OPERATION
SCHENECTADY, N.Y.
J. ORION RESEARCH INC.
SAGE PUMP DIV.
WHITE PLAINS, N.Y — (SIMILAR TO MOD. #234-4)
K. J.D. HEINTZ CO
CLEVLAND, OHIO
L. BOURNS INC.
RIVERSIDE, CALIF.
M. ACOPIAN CORP.
EASTON PA.
(SIMILAR TO MODEL #15ETIOD)
N. GENERAL ELECTRIC CO, SPACE DIV.
PHILA, PA.
(USES CHICAGO MIN. LAMP CO. MODEL No 1487 AND INTERNATIONAL RECT. CO. PHOTOCELL No, SPR-8-10PL)

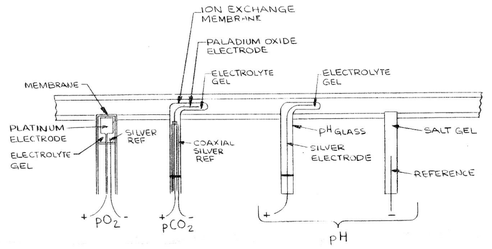
NOTES:

1. INTERPRETATION OF DWG TERMS AND TOLERANCES PER 11BA1664.
2. MARK "GE47E220750 (GROUP OR PART NUMBER AS APPLICABLE) PER 11BA1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

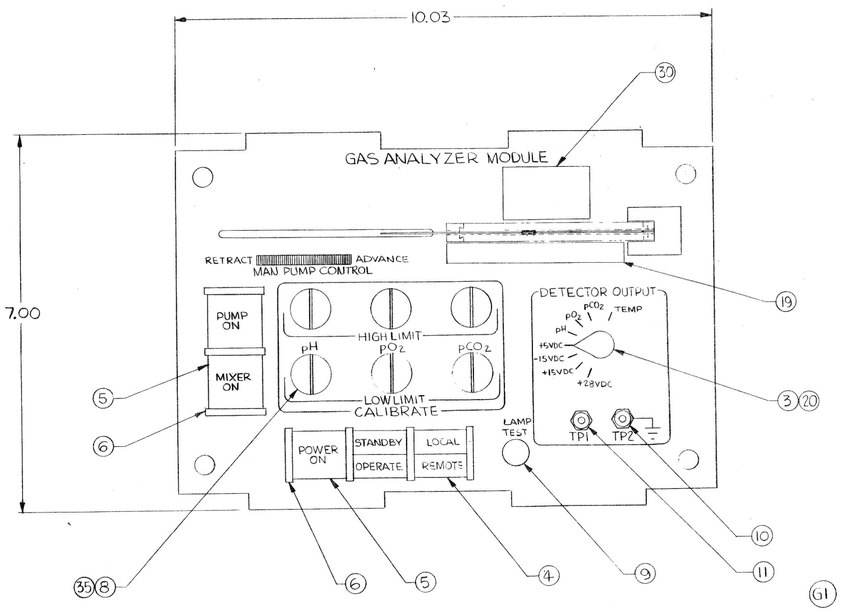
THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

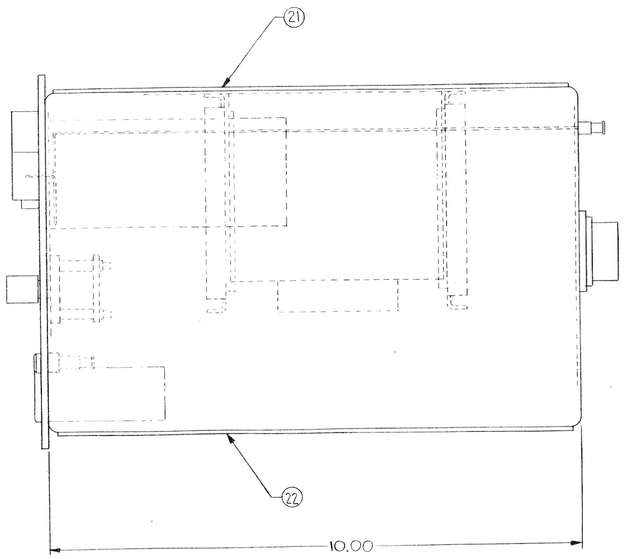
70 SD 5252	LABORATORY ANALYSIS SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5390	LABORATORY ANALYSIS SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5342	GAS ANALYZER — MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(S). — 3.2.3.1, 2 & 3
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY



DETAIL A
SCALE NONE





REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

	6	3535S	35	POTENTIOMETER	L
	1	47E220750-P34	34	pH REFERENCE ELECTRODE	H
	1	-P33	33	pH ELECTRODE	H
	1	-P32	32	pCO_2 ELECTRODE	H
	1	-P31	31	pO_2 ELECTRODE	H
	1	47E220750-P30	30	I.D. READER	N
	X	47D220703	29	DIAG, SIGNAL FLOW	
	1	LJT07RE-17-35P	28	CONNECTOR	F
	1	LJT07RE-9-6P	27	CONNECTOR	F
	1	47E220750-P26	26	FITTING, DRIPLESS QUICK DISCONNECT	K
	4	47E220750-P25	25	SHIELD	
	4	202933-2	24	CONNECTOR	E
	4	202934-2	23	CONNECTOR	E
	1	47E222826614	22	COVER, BOTTOM	
	1	47E222826610	21	COVER, TOP	
	1	MS91528-0K1B	20	KNOB	
	1	47E220750-P19	19	MIXER, MAGNETIC	
	1	-P18	18	DETECTOR ASSY	
	1	-P17	17	PUMP, SYRINGE	J
	1	-P16	16	SIGNAL CONDITIONER CIRCUIT	
	1	-P15	15	SIGNAL CONDITIONER CIRCUIT	
	1	-P14	14	SIGNAL CONDITIONER CIRCUIT	
	1	-P13	13	MAGNETIC MIXER CIRCUIT	
	1	47E220750-P12	12	POWER SUPPLY	M
	1	MS16108-8A	11	TEST JACK (YELLOW)	
	1	MS16108-3A	10	TEST JACK (BLACK)	
	1	W9601-B	9	SWITCH, PUSH BUTTON	D
	6	PT70-2-2	8	KNOB, SELF LOCK	C
	8	17B-7-1	7	RETAINER, PCB	G
	4	30E505	6	BARRIER	B
	3	30EAC4F3.1WLNN	5	SWITCH, ILLUMINATED PUSH BUTTON	B
	2	30EAC4F3.2WLZNN	4	SWITCH, ILLUMINATED PUSH BUTTON	B
	1	399217A	3	SWITCH, ROTARY	A
	1	47E222826621	2	MODULE	
	X	47E220750G1	1	ASSEMBLY	

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASS'Y.						LIST OF MATERIAL	

PART NO	NEXT ASSY
47E220750G1	47E220699G1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	26	10	70
CHECKED	26	10	70
ENGR APPD	10	11	70
MFG APPD	30	10	70
PROJ MGR	30	10	70
QUALITY			

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

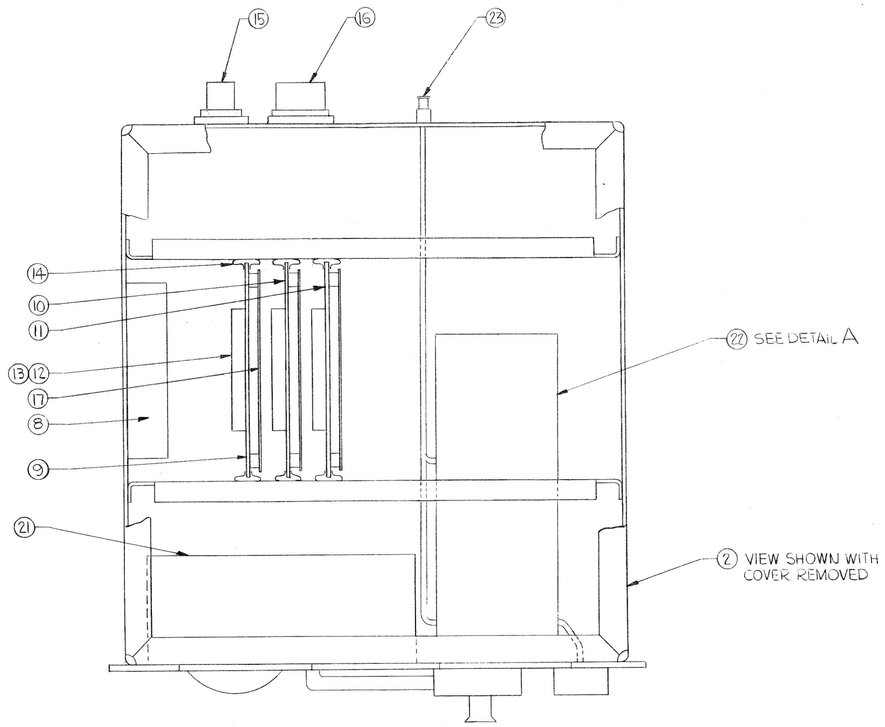
MODULE, ASSEMBLY OF GAS ANALYZER LAB ANALYSIS SUBSYSTEM IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220750

SCALE 1:1 SHEET 1 OF 1

ER47E220750 REV

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



VENDOR NOTES

A. OAK MFG CO
CRYSTAL LAKE, ILL.

B. MASTER SPECIALTIES CO
COSTA MESA, CALIF.

C. CONTROLS CO OF AMERICA
FOLCROFT PA.

D. AMP CORP.
HARRISBURG, PA

E. THE BIRTCHER CORP
MONTEREY PARK, CALIF.

F. BENDIX ELEC PROD DIV
SIDNEY, N.Y.

G. ORION RESEARCH INC
SAGE PUMP DIV
WHITE PLAINS, N.Y.

H. J.D. HEINTZ CO.
CLEVLAND, OHIO.

I. PARTICLE DATA INC.
ELMHURST, ILL.
(SIMILAR TO HEMOLAB ™ MODEL)

J. ACOPIAN CORP.
EASTON PA.
(SIMILAR TO MODEL #15ET10D)

K. THE RANDOLPH CO.
HOUSTON, TEX.
(SIMILAR TO MODEL # 500)

L. GENERAL ELECTRIC CO, SPACE DIV.,
PHILA, PA. (USES CHICAGO MIN. LAMP CO.
MODEL NO 1487 AND INTER. RECT. CO.
PHOTOCELL MODEL NO SPR-8-10PL)

NOTES
1. INTERPRETATION OF DWG TERMS AND TOLERANCES PER 118A1664
2. MARK GE47E220751 (GROUP OR PART NUMBER AS APPLICABLE) PER 118A1526 CL2I
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE

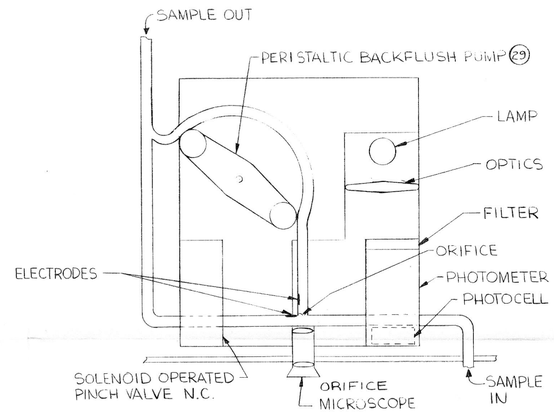
THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5252	LABORATORY ANALYSIS SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5390	LABORATORY ANALYSIS SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5344	PARTICLE DETECTOR – MODULE SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s). 3.2.1.1, 2,3,4,5,6,7, & 8
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

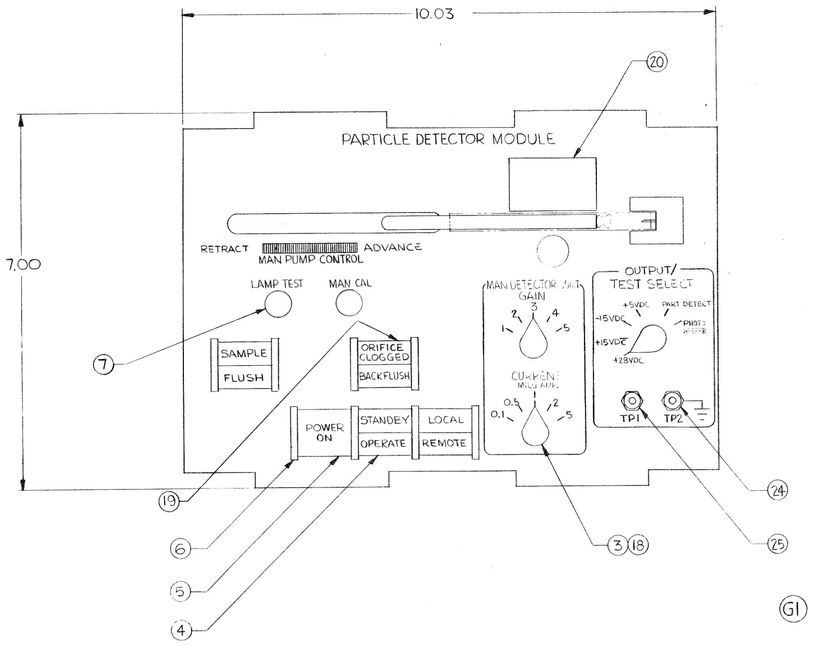
PRELIMINARY

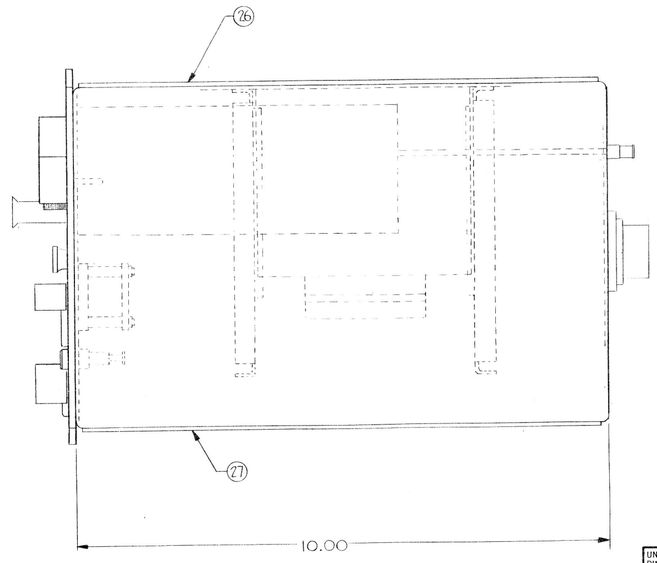
REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES



DETAIL A
SCALE: NONE





		47D220751-P29	29	PUMP, PERISTALTIC	K
	X	47D220752	28	DIAG, SIGNAL FLOW	
	1	47E222826G14	27	COVER, BOTTOM	
	1	47E222826G10	26	COVER, TOP	
	1	MS16108-8A	25	TEST JACK (YELLOW)	
	1	MS16108-3A	24	TEST JACK (BLACK)	
	1	47E220751-P23	23	FITTING, DRIPLESS QUICK DISCONNECT	H
	1	47E220751-P22	22	DETECTOR, PARTICLE (PHOTOMETRIC	I
	1	47E220751-P21	21	PUMP, SYRINGE	G
	1	47E220751-P20	20	IDENT DETECTOR	L
	1	90EA1G4F5J2W1N1	19	SWITCH, ILLUMINATED PUSH BUTTON	B
	3	MS91528-0K1B	18	KNOB	
	3	47E220751-P17	17	SHIELD	
	1	LJT07RE-17-35P	16	CONNECTOR	F
	1	LJT07RE-9-6P	15	CONNECTOR	F
	6	17B-7-1	14	RETAINER PCB	E
	3	202933-2	13	CONNECTOR	D
	3	202932-2	12	CONNECTOR	D
	1	47E220751-P11	11	PRE AMP CIRCUIT	
	1	47E220751-P10	10	CLOGGED ORIFICE DETECTOR CIRCUIT	
	1	47E220751-P3	9	CURRENT SUPPLY CIRCUIT	
	1	47E220751-P8	8	POWER SUPPLY	J
	2	W9601-B	7	SWITCH, PUSH BUTTON	C
	8	90E505	6	BARRIER	B
	1	90EA1G4F5J1W1N1	5	SWITCH, ILLUMINATED PUSH BUTTON	B
	3	90EA1G4F5J2W1N1	4	SWITCH, ILLUMINATED PUSH BUTTON	B
	3	399223A	3	SWITCH, ROTARY	A
	1	47E222826G2	2	MODULE	
	X	47E220751G1	1	ASSEMBLY	

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASS'Y.						LIST OF MATERIAL	

47E220751G1	47E220699G1	
PART NO.	NEXT ASSY	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL –
ALL SURF. √

SIGNATURES	DAY	MO	YR
DRAWN	21	11	70
CHECKED	23	10	70
APPROVED	12	11	70
ENGR	30	10	70
MFG	6	12	70
QUAL	3	12	70
J A Graham	3	11	70
		"	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

MODULE, ASSEMBLY OF
PARTICLE DETECTOR
LAB ANALYSIS SUB SYSTEM
IMBLMS 64

SIZE	CODE IDENT NO.	
E	23991	ER47E220751

SCALE 1:1 SHEET 1 OF 1

REV E ER47E220751

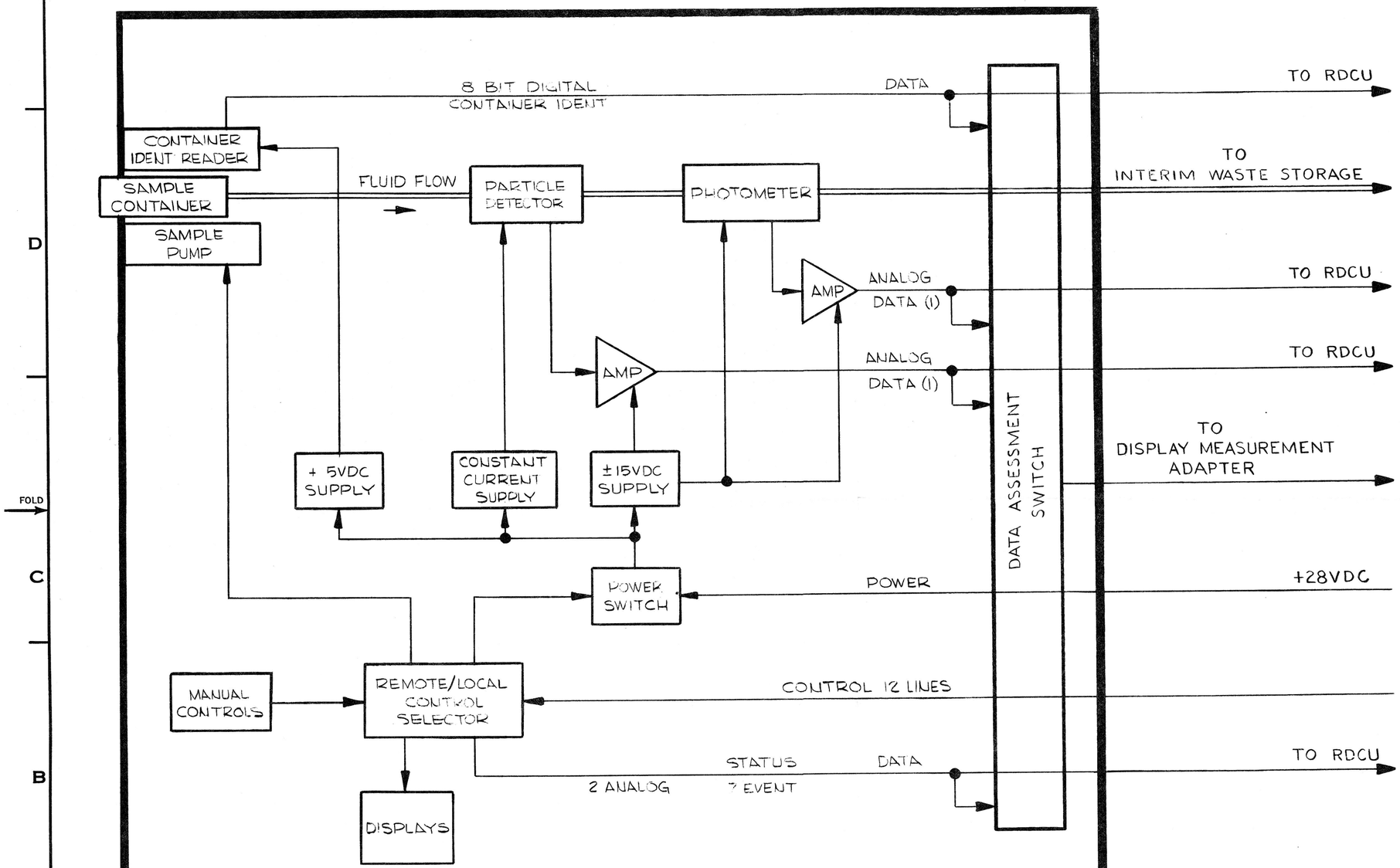
REV E ER47E220751

PRINTED IN U.S.A.

SIZE		REV
C	ER47C220752	

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN T. KAMRE	5	10	70
CHECKED H. W. Hess	21	10	70
[redacted] RELEASED PE&R J. G.	10	11	70
ENGRG [redacted]	22	10	70
[redacted]	22	10	70
[redacted]	21	[illegible]	[illegible]
[redacted]	[illegible]	[illegible]	[illegible]
[redacted]	27	[illegible]	[illegible]

GENERAL ELECTRIC
SPACE SYSTEMS [redacted] LOC PHILA, PA.

DIAGRAM SIGNAL FLOW
PARTICLE DETECTOR MODULE
LABORATORY ANALYSIS SUB-SYSTEM
IMBLMS BA

PRELIMINARY

SIZE	CODE IDENT NO.	
C	23991	ER47C220752

SCALE [illegible] SHEET 1 OF 1

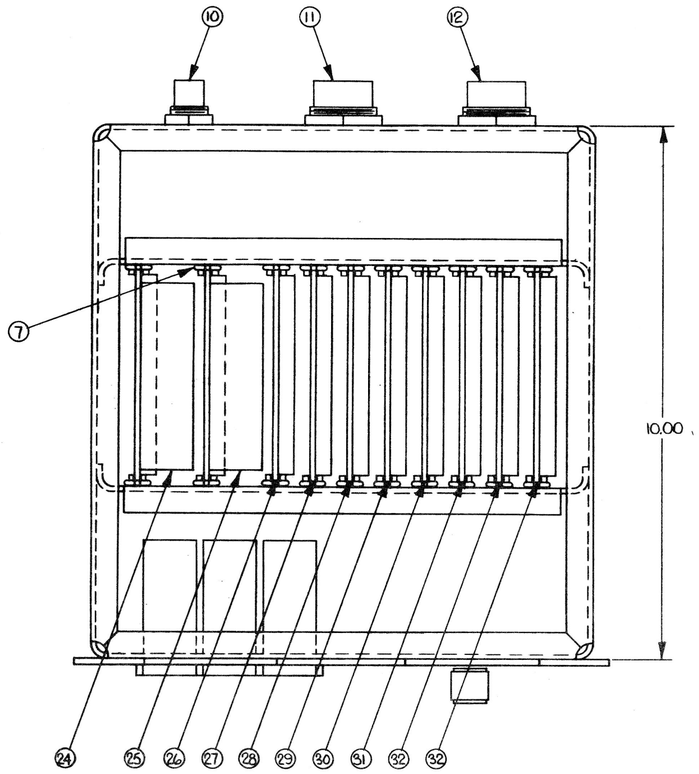
47C220752	47E220751G1
DWG NO	NEXT ASSY

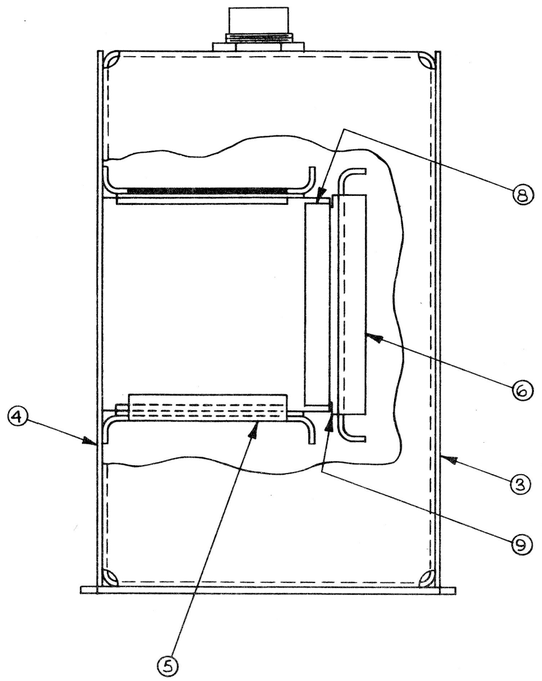
DIST TO

SIZE C ER47C220752 REV

FN 903-F (3-68)
PRINTED IN U.S.A.

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE	APPROVED



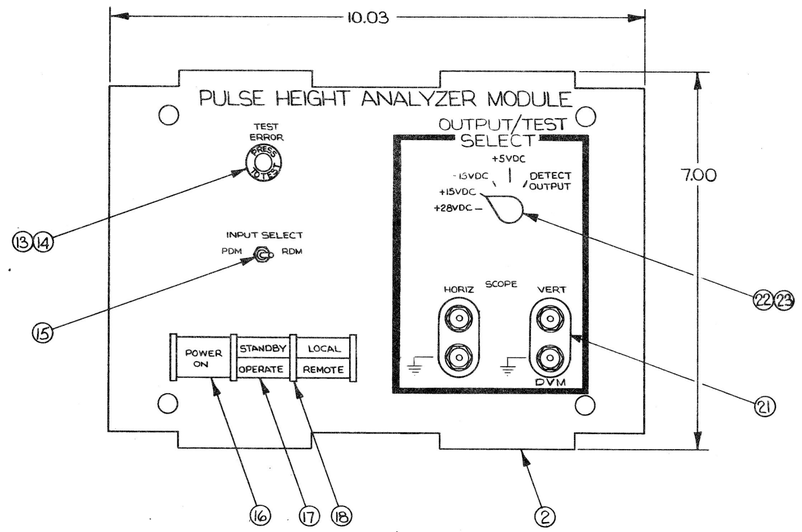


PRELIMINARY

NOTES
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664
2. MARK GE47E220753(GROUP OR PART NUMBER AS APPLICABLE) PER 118A1526 CL 2|
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5252	LABORATORY ANALYSIS SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5390	LABORATORY ANALYSIS SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5346	PULSE HEIGHT ANALYZER MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s). 3.2.1.1, 2, &3 3.2.5,6,7, &8 3.2.4.1 3.3.3.1
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.



VENDOR NOTES
- A. THE BIRTCHER CORP MONTEREY PARK, CALIF
- B. AMP CORP HARRISBURG, PA
- C. BENDIX ELECTRICAL COMPONENT DIV SIDNEY, NEW YORK
- D. ALCO ELECTRONIC PROD INC LAWRENCE, MASS
- E. MASTER SPECIALTIES CO COSTA MESA, CALIF
- F. POMONA ELECTRONICS CO POMONA, CALIF
- G. OAK MFG CO CRYSTAL LAKE, ILL
- H. ACOPIAN CORP EASTON PA (SIMILAR TO MOD. NO. 15ET10D)

G1

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
			X	47D220754	33	DIAGRAM, SIGNAL FLOW	
			2	47E220753P32	32	COUNTER/MEMORY	
			1	P31	31	OUTPUT SCANNER	
			1	P30	30	D/A CONVERTERS	
			1	P29	29	DECODE MATRIX	
			1	P28	28	A/D CONVERTER	
			1	P27	27	DIFFERENTIATOR & ZERO CROSSING DETECTOR	
			1	P26	26	TRACK AND HOLD	
			1	P25	25	POWER SUPPLY ±15VDC	H
			1	47E220753P24	24	POWER SUPPLY +5VDC	H
			1	MS91528-0K1B	23	KNOB	
			1	399223A	22	SWITCH, ROTARY	G
			2	1286	21	PLUG, BANANA	F
					20		
					19		
			4	90E505	18	BARRIER	E
			2	90EA1C4F3J2WL2N1	17	SWITCH, ILLUMINATED PUSHBUTTON	E
			1	90EA1C4F3J1WL1N1	16	SWITCH, ILLUMINATED PUSHBUTTON	E
			1	MSTG-106D	15	SWITCH, TOGGLE	D
			1	MS25041-2	14	LIGHT, PRESS TO TEST RED	
			1	MS25237-327	13	LAMP, 28V	
			1	LJT07RE-17-35P	12	CONNECTOR, 55 PIN	C
			1	LJT07RE-17-35PA	11	CONNECTOR, 55 PIN	C
			1	LJT07RE-9-6P	10	CONNECTOR, 6 PIN	C
			10	202932-1	9	CONNECTOR, 71 PIN	B
			10	202933-1	8	CONNECTOR, 71 PIN	B
			20	17B-7-1	7	RETAINER, PCB	A
			1	47E220753P6	6	BASE, CONNECTOR MOUNTING	
			2	47E220753P5	5	BULKHEAD	
			1	47E222826G10	4	COVER, TOP	
			1	47E222826G14	3	COVER, BOTTOM	
			1	47E222826G2	2	MODULE	
			X	47E220753G1	1	ASSEMBLY	

REQUIREMENTS PER ASSY

LIST OF MATERIAL

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	22	10	70
CHECKED	2	11	70
APPROVED	12	11	70
ENGR	11	3	70
	3	11	70
	2	11	70
	*	11	70
	4	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA

MODULE, ASSEMBLY OF PULSE HEIGHT ANALYZER LA S/S IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220753

SCALE 1/1 SHEET 1 OF 1

47E220753G1	47E220699G1
PART NO.	NEXT ASSY

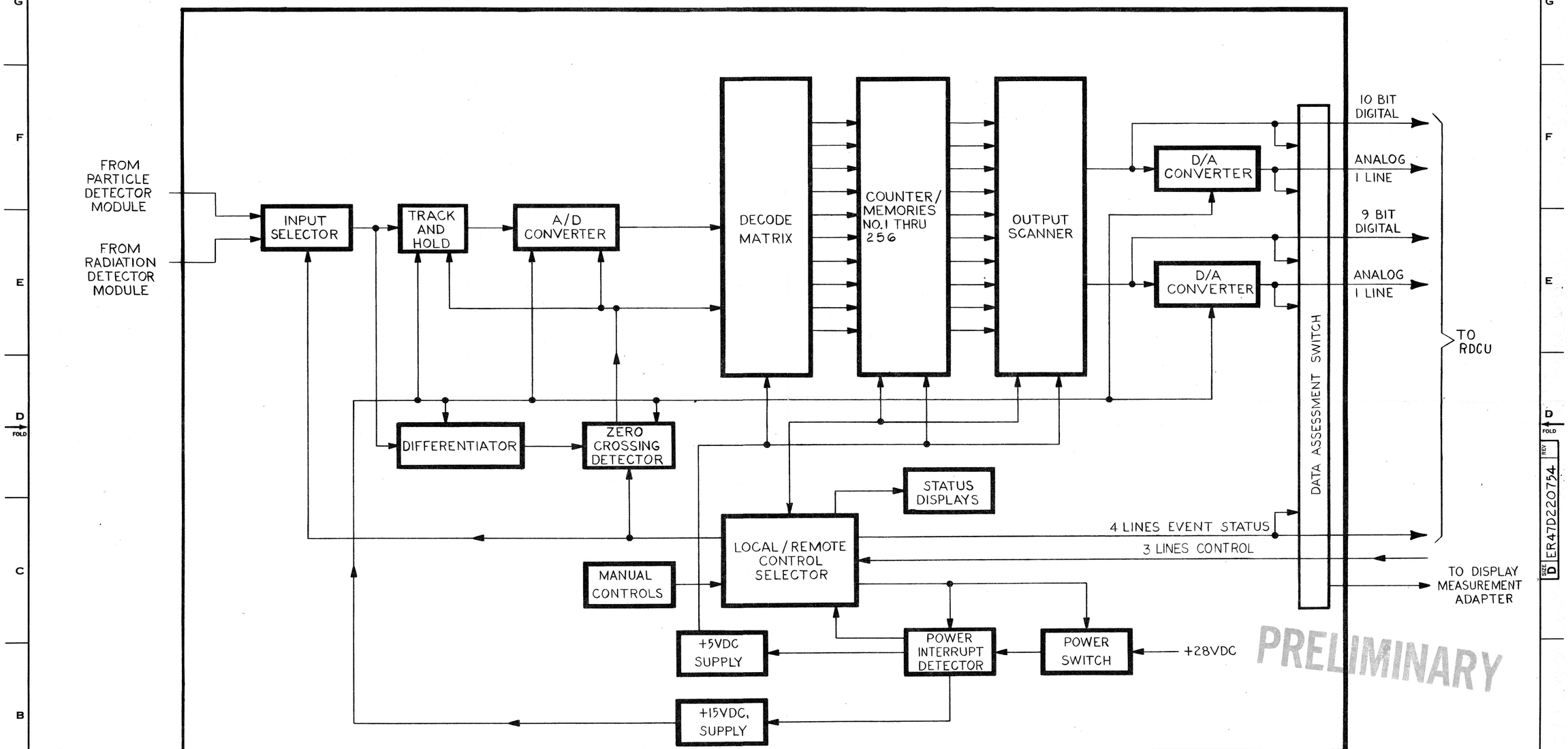
REV E ER47E220753

REV E ER47E220753

DWG NO

PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



47D220754	4TE220753G1
DRAWING NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN J. Hill	13	10	70
CHECKED [illegible]	22	10	70
ISSUED RELEASED PCER	10	11	70
ENGR J. Hunter	22	10	70
[illegible]	22	10	70
[illegible]	21	10	70
[illegible]	20	10	70
R.J. D'Arcangelo	1	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA.

DIAGRAM, SIGNAL FLOW
PULSE HEIGHT ANALYZER MODULE
LA S/S IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D220754

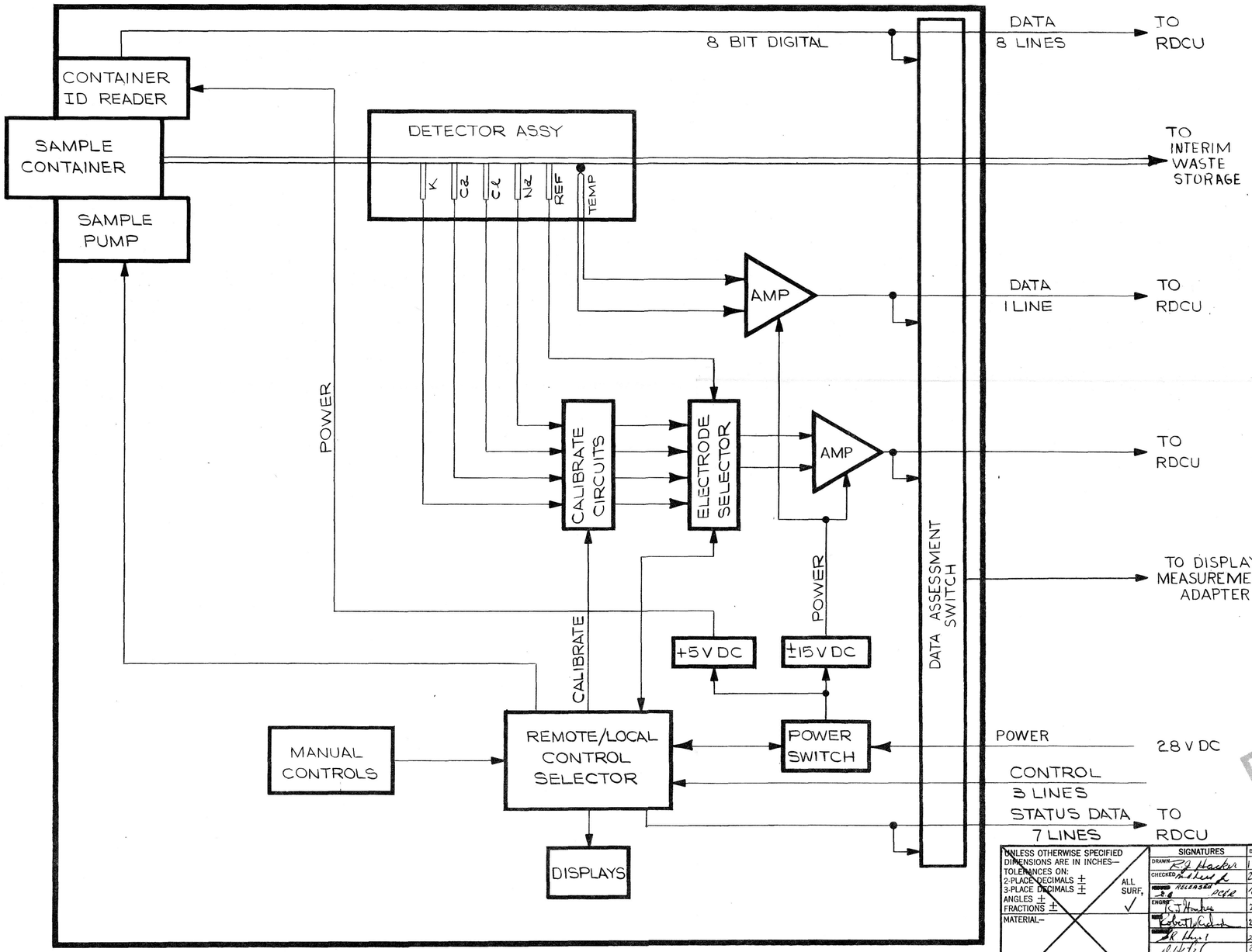
SCALE NONE SHEET 1 OF 1

DIST TO

SIZE D ER47D220754 REV

PN-004-P D-001
PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



PRELIMINARY

47D220755	47E220756G1
DWG NO	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN RJ Hasker	13	10	70
CHECKED	22	10	70
RELEASED	10	11	70
ENGNR	22	10	70
	22	10	70
	27	11	70
	26	11	70
	27	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

DIAGRAM, SIGNAL FLOW ELEMENT ANALYZER MODULE LA S/S IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER 47D220755

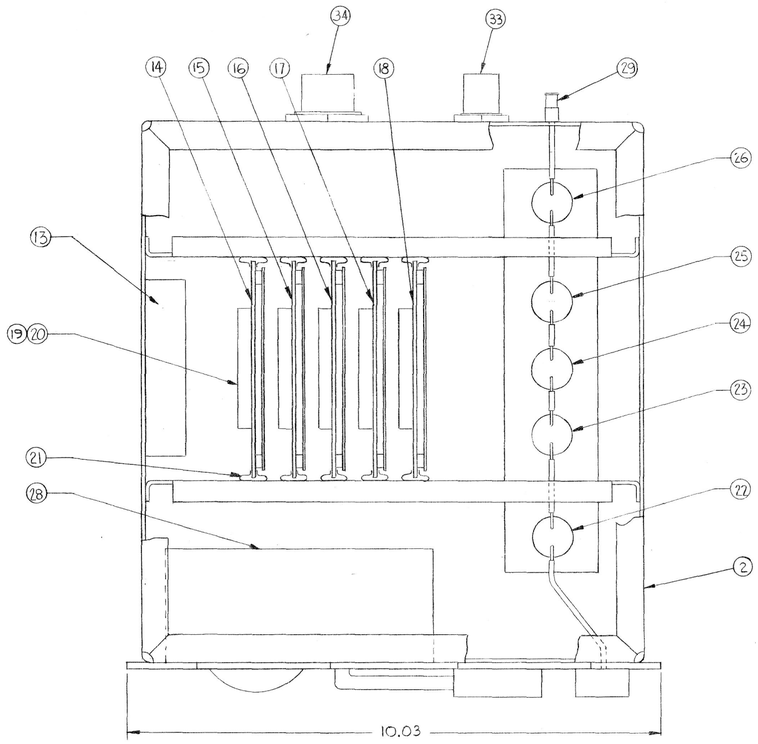
SCALE — SHEET 1 OF 1

SIZE D ER47D220755 REV

DIST TO

PH-604-F (5-69) PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



VIEW SHOWN WITH COVER REMOVED

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5252	LABORATORY ANALYSIS SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5390	LABORATORY ANALYSIS SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5341	ELEMENT ANALYZER MODULE SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s). ¢ 3.1.2 ¢ 3.1.2.3 ¢ 4 ¢ 1, 2, 3, ¢ 4
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

NOTES

1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47E220756 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

VENDOR NOTES

A. OAK MFG CO. CRYSTAL LAKE, ILL.
B. MASTER SPECIALTIES CO. COSTA MESA, CALIF.
C. CONTROLS CO. OF AMERICA FOLCROFT, PA.
D. RAYTHEON CO. INDUSTRIAL PROD DIV QUINCY, MASS
E. AMP INC HARRISBURG, PA
F. THE BIRTCHER CORP MONTEREY, CALIF.
G. THE BENDIX CORP SCINTILLA DIV SIDNEY, NY
H. ORION RESEARCH INC. CAMBRIDGE, MASS.
J. ORION RESEARCH INC, SAGE PUMP DIV WHITE PLAINS, N.Y.
K. JACK D HIENTZ CO. CLEVELAND, OHIO
L. GENERAL ELECTRIC CO., SPACE DIV. PHILA., PA.

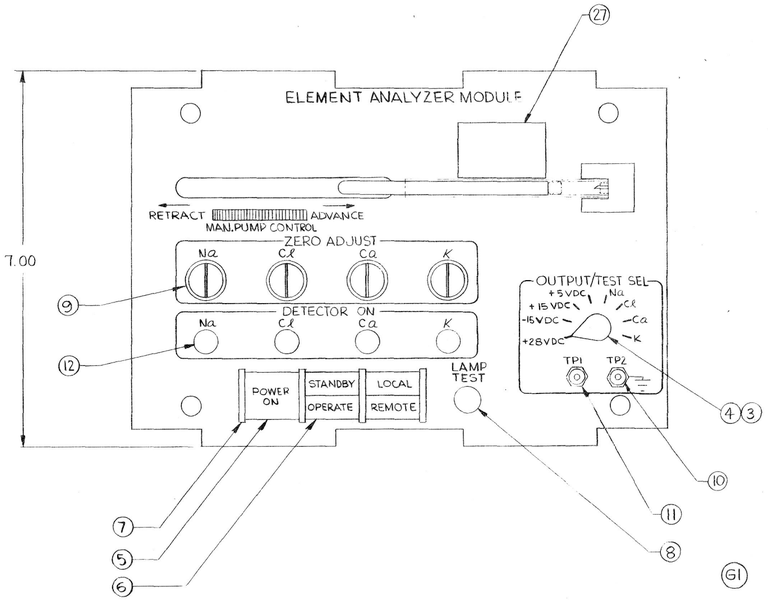
SIMILAR TO MODEL NOS 900300 (REF) 981700 (CE), 981100 (NA) 981900 (K), & 982000 (KA) → H

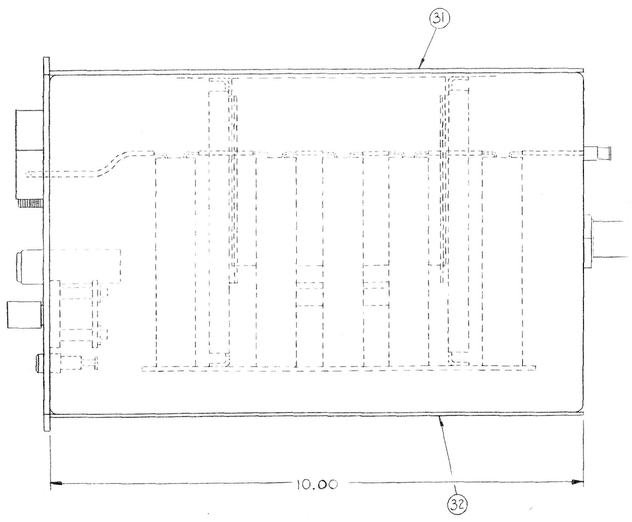
SIMILAR TO MODEL NOS. 234-4 → J

USES CHICAGO MIN. LAMP CO. MODEL NO. 1487 AND INTER. RECT CO. PHOTOCELL MODEL NO. SPR-8-10PL → L

PRELIMINARY

Q4	Q3	Q2	Q1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
						LIST OF MATERIAL	
				LWT07RE-17-35P	34	CONNECTOR	G
				LWT07RE-9-6P	33	CONNECTOR	G
				47E222826G14	32	COVER, BOTTOM	
				47E222826G10	31	COVER, TOP	
				47E220755	30	DIAG, SIGNAL FLOW	
				47E220756P29	29	FITTING, DRIPLESS QUICK DISCONNECT	K
				47E220756P28	28	PUMP, SYRINGE	J
				47E220756P27	27	IDENT DETECTOR	L
				47E220756P26	26	ELECTRODE REF FLOW THRU	H
				47E220756P25	25	ELECTRODE Na	H
				47E220756P24	24	ELECTRODE Cl	H
				47E220756P23	23	ELECTRODE Ca	H
				47E220756P22	22	ELECTRODE K FLOW THRU	H
				17B-7-1	21	RETAINER, PCB	F
				202932-2	20	CONNECTOR	E
				202933-2	19	CONNECTOR	E
				47E220756P18	18	SIGNAL CONDITIONER CIRCUIT	
				P17	17	SIGNAL CONDITIONER CIRCUIT	
				P16	16	SIGNAL CONDITIONER CIRCUIT	
				P15	15	SIGNAL CONDITIONER CIRCUIT	
				P14	14	SAMPLE ID AMP CIRCUIT	
				47E220756P13	13	POWER SUPPLY	
				MS25256-10	12	LIGHT, INDICATOR, WHITE	
				MS16108-8A	11	TEST JACK (YELLOW)	
				MS16108-3A	10	TEST JACK (BLACK)	
				PT70-2-2	9	KNOB, SELF LOCK	D
				W9601-B	8	SWITCH, PUSH BUTTON	C
				90E505	7	BARRIER	B
				90EA1C4F3J2W L2N1	6	SWITCH, ILLUMINATED PUSH BUTTON	B
				90EA1C4F3J1W L1N1	5	SWITCH, ILLUMINATED PUSH BUTTON	B
				MS91528-0K1B	4	KNOB	
				399217A	3	SWITCH, ROTARY	A
				47E222826G2	2	MODULE	
				47E220756G1	1	ASSEMBLY	





REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47E220756G1	47E220699G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL BURS ✓

SIGNATURES	DAY	MO	YR
DRAWN		11	70
CHECKED	22	10	70
ENGR APPR	11	11	70
MFG APPR	11		70
PROJ MGR	23	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

MODULE, ASSEMBLY OF ELEMENT ANALYZER LAB ANALYSIS SUBSYSTEM IMBLMS E4

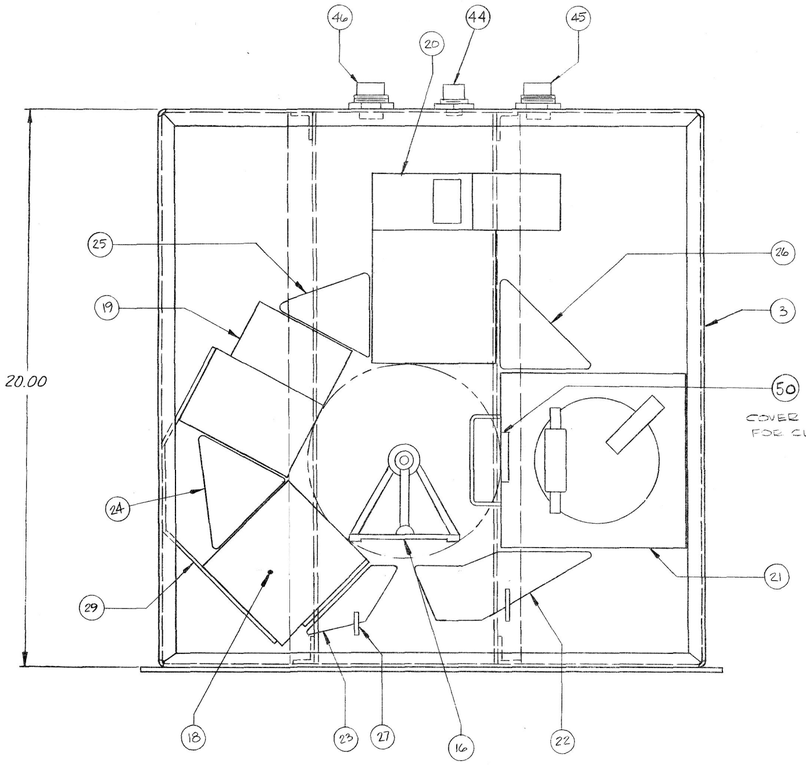
SIZE	CODE IDENT NO.	
E	23991	ER47E220756

SCALE 1:1 SHEET 1 OF 1

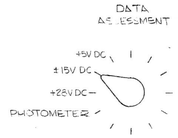
REV E ER47E220756 DIST 10

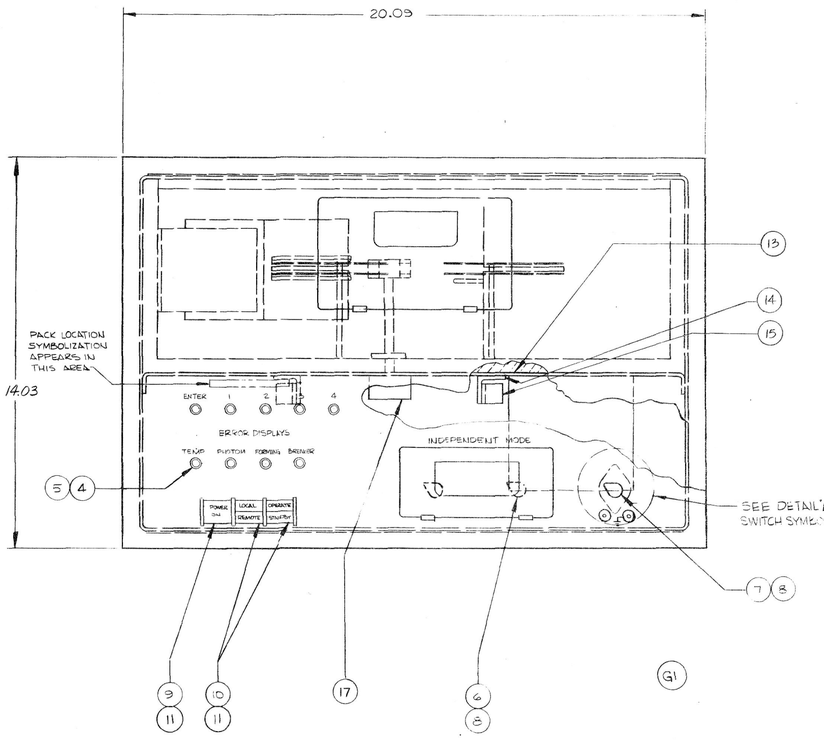
DRAWING NO. E ER47E220756 REV

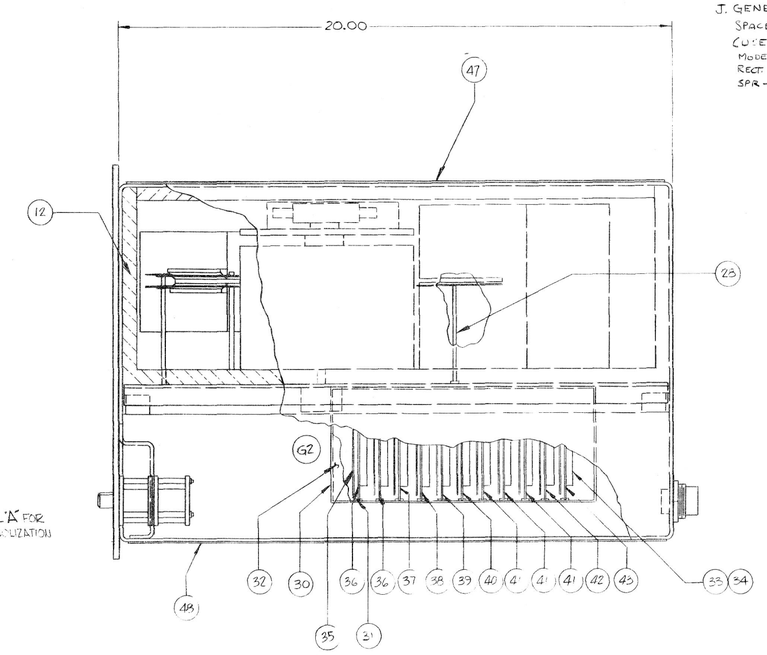
PRINTED IN U.S.A.



DETAIL 'A'
SCALE - FULL SIZE







REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5252	LABORATORY ANALYSIS SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5390	LABORATORY ANALYSIS SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5343	BIOCHEMICAL ANALYZER - MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s). 3.1.5.1, 2, & 3 3.3.2.1, 2, 3, 4, 5, 6, & 7
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

NOTES
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER USAS B4.
2. MARK GE47E220757 G NO. OR P NO. AS APPLICABLE PER USAS B-6, CLASS C.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

VENDOR NOTES
A. OAK MFG CO.
CRYSTAL LAKE ILL.
B. MASTER SPECIALITIES CO
COSTA MESA, CALIF.
C. AMP INC
HARRISBURG, PA.
D. BIRTCHER CORP
MONTEREY, CALIF
E. E.I DUPONT & CO. INC. ← SIMILAR TO COMPONENTS OF ACA
INSTRUMENT & EQUIPMENT DIV
WILMINGTON, DEL.
F. BENDIX ELEC. COMP. DIV.
SYDNEY, N.Y.
G. IMC MAGNETICS CORP.
MAYWOOD CALIF
(SIMILAR TO MODEL # 015-802)
H. ACOPIAN CORP.
EASTON PA.
(SIMILAR TO # 15 ET 10D)
I. IMC MAGNETICS CORP.
MAYWOOD CALIF.
(SIMILAR TO MODEL # 0128 15 4812-01)
J. GENERAL ELECTRIC CO.
SPACE DIV. PHILA. PA
(USE: CHICAGO MIN. LAMP CO. MODEL NO 1487 AND INTERNATIONAL RECT. CO. PHOTOCELL MODEL NO SPR-8-10PL)

PRELIMINARY

REQUIREMENTS PER ASSY	ITEM NO	IDENTIFICATION NO.	DESCRIPTION	SEE NOTE
-	1	47E220757P50	IDENT. DETECTOR	J
	X	47D220758	DIAG, SIGNAL FLOW	
-	1	47E222828G8	COVER, BOTTOM	
-	1	47E222828G6	COVER, TOP	
1	-	LJT07RE-17-55P	46 CONNECTOR	F
1	-	LJT07RE-17-26P	45 CONNECTOR	F
1	-	LJT07RE-9-6P	44 CONNECTOR	F
1	-	47E220757P43	43 ERROR DETECTOR	
1	-	47E220757P42	42 PHOTOMETER CONTROL	
3	-	47E220757P41	41 SIGNAL CONDITIONER	
1	-	47E220757P40	40 BREAKER MIXER CONTROL	
1	-	47E220757P39	39 MOTOR CONTROL	I
1	-	47E220757P38	38 TEMP MONITOR	
1	-	47E220757P37	37 TIMER	
2	-	47E220757P36	36 POWER SUPPLY	H
11	-	47E220757P35	35 SHIELD	
11	-	202933-1	34 CONNECTOR	C
11	-	202932-2	33 CONNECTOR	C
1	-	47E220757P32	32 COVER	
22	-	175-7-1	31 RETAINER PCB	D
1	-	47E220757P30	30 CHASSIS	
-	1	47E220757P29	29 PREHEATER MTG PLATE	
-	3	47E220757P28	28 GUIDE MTG ROD	
-	2	47E220757P27	27 GUIDE MTG ROD	
-	1	47E220757P26	26 PACK GUIDE	
-	1	47E220757P25	25 PACK GUIDE	
-	1	47E220757P24	24 PACK GUIDE	
-	2	47E220757P23	23 PACK GUIDE	
-	2	47E220757P22	22 PACK GUIDE	
-	1	47E220757P21	21 PHOTOMETER	E
-	1	47E220757P20	20 BREAKER/MIXER	E
-	1	47E220757P19	19 PREHEATER #2	E
-	1	47E220757P18	18 PREHEATER #1	E
-	1	47E220757P17	17 MOTOR ELECT ASSEMBLY	G
-	1	47E220757P16	16 PIVOT ARM	
-	4	47E220757P15	15 ANGLE, MTG	
-	2	47E220757P14	14 ANGLE, STIFFENER	
-	1	47E220757P13	13 PLATE, PARTITION	
-	AR	47E220757P12	12 POLYURETHANE FOAM - 4#/FT³	
-	4	90ES32	11 FAIRLEIR	B
-	2	90EMCAF2WCW2N1	10 SWITCH, ILLUM PUSHBUTTON	B
-	1	90EMCAF2WJWLN1	9 SWITCH, ILLUM PUSHBUTTON	B
-	3	MS91585-0K16	8 KNOB	
-	1	399658-MF	7 SWITCH ROTARY	A
-	2	399217A	6 SWITCH ROTARY	A
-	9	MS25256-10	5 INDICATOR	
-	9	MS-3227-317	4 PLUG	
-	1	47E222828G2	3 MODULE	
X	1	47E220757G2	2 ASSEMBLY	
-	X	47E220757G	1 ASSEMBLY	

LIST OF MATERIAL

G4	G3	G2	G1
47E220757G1		47E220699G1	
PART NO.		NEXT ASSY	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES--
TOLERANCES ON:
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
ALL OVER ✓
MATERIAL--

SIGNATURES	DAY	MO	YR
DRAWN	30	10	70
CHECKED	6	11	70
ISSUED	14	11	70
APPROVED	7	11	70
QA	7	11	70
	11	11	70
	11	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

MODULE ASSEMBLY OF BIOCHEMICAL ANALYZER
-A/SE
IMBUMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220757

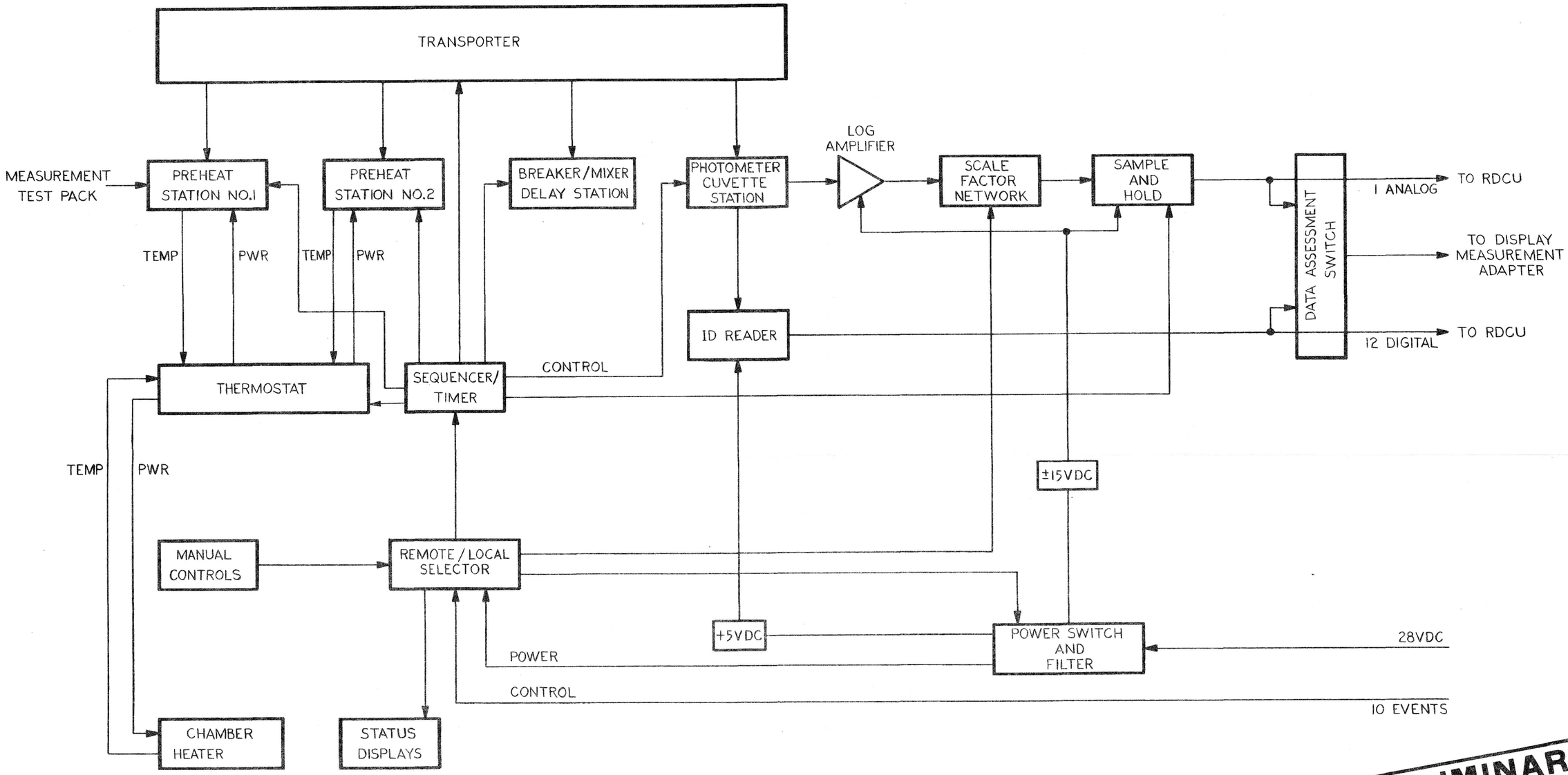
SCALE 1:2 SHEET 1 OF

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED

ER47E220757 REV I SIZE E
ELITE220757 REV I SIZE E
DIST TO

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



PRELIMINARY

47D220758	47E220757G1
DRAWING NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	29	10	70
CHECKED	30	10	70
ISSUED RELEASED	10	11	70
ENGRG	30	10	70
MFG	30	10	70
QUALITY	30	10	70
PROJ	30	10	70
	3	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

DIAGRAM, SIGNAL FLOW
BIOCHEMICAL ANALYZER MODULE
LA S/S IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D220758

SCALE NONE | SHEET 1 OF 1

DIST TO

FN-666-F (1-68) PRINTED IN U.S.A.

SIZE		SHEET	REV
A	ER47A220760	1 OF 1	

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

SOURCE: B & K INSTRUMENTS, INC.
CLEVELAND, OHIO.

GE PART NUMBER	PART DESCRIPTION	MANUFACTURER'S PART NUMBER
P1	ARTIFICIAL EAR	4153

PACKAGING - THE FOLLOWING SHALL APPEAR ON ALL PACKAGES

GE DRAWING AND PART NUMBER
MANUFACTURER'S NAME & PART NUMBER

PRELIMINARY

47A220760P1	47E220698G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON:
FRACTIONS ± DECIMALS ± ANGLES ±
ALL SURFACE ✓
MATL—

SIGNATURES	DAY	MO	YR
DRAWN F KOMOF	29	9	70
CHECKED	29	9	70
RELEASED	10	11	70
ENGRG	4	11	70
	4	11	70
	4	11	70
	5	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

ARTIFICIAL EAR
PE S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
A	23991	ER47A220760

SCALE — SHEET 1 OF 1

DIST TO

FN 901-F (5-67) PRINTED IN U.S.A.

SIZE		SHEET	REV
A	ER47A220761	1 OF 1	

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

SOURCE: B & K INSTRUMENTS INC.
CLEVELAND, OHIO.

GE PART NUMBER	PART DESCRIPTION	MANUFACTURER'S PART NUMBER
P1	PISTONPHONE	4220

PACKAGING - THE FOLLOWING SHALL APPEAR ON ALL PACKAGES

GE DRAWING AND PART NUMBER
MANUFACTURER'S NAME & PART NUMBER

PRELIMINARY

47A220761P1	47E220730G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ON:
FRACTIONS ± DECIMALS ± ANGLES ±
ALL SURFACES ✓
MATL—

SIGNATURES		DAY	MO	YR
DRAWN	T. KAMPF	29	9	70
CHECKED		29	9	70
ENGRG RELEASE		10	11	70
ENGRG		4	11	70
		4	11	70
		4	11	70
		5	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT LOC PHILA, PA

PISTONPHONE
PE S/S
IMBLMS 84

SIZE	CODE IDENT NO.	
A	23991	ER47A220761

SCALE 20 SHEET 1 OF 1

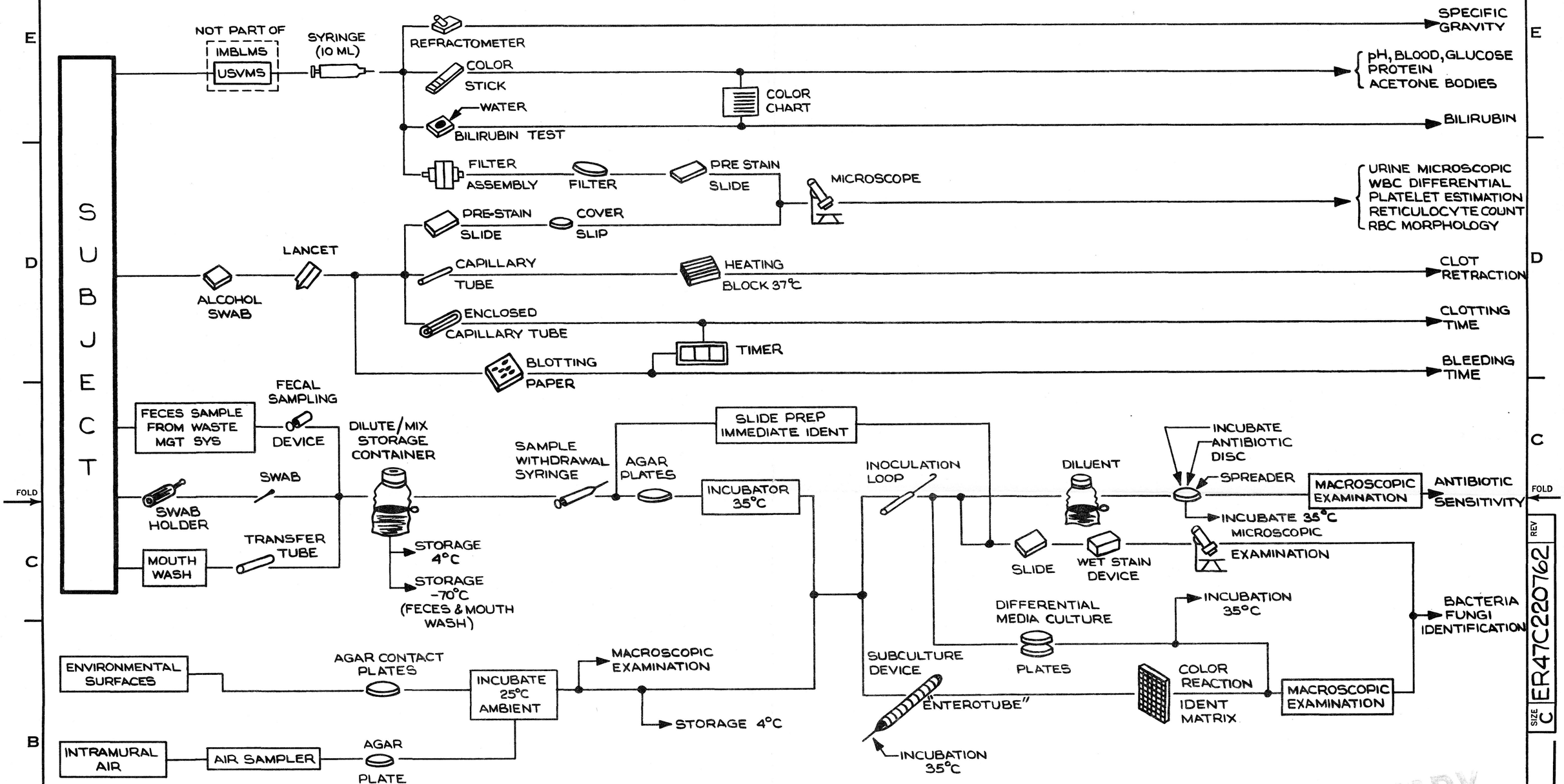
DIST TO

FN 901-F (5-67) PRINTED IN U.S.A.

SIZE C | ER47C220762 | REV

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED



PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN J. Swipes	1	10	70
CHECKED	2	10	70
~~ISSUED~~ RELEASED PCER	10	11	70
ENGRG David B. Wright	2	10	70
MFG	2	10	70
QUALITY S. A. Geglin	20	10	70
	23	10	70

GENERAL ELECTRIC

SPACE SYSTEMS LOC PHILA., PA

PROCEDURES AND MEASUREMENT EQUIPMENT, MICROBIOLOGICAL/ DIRECT OBSERVATION MODULE LA S/S IMBLMS B4

SIZE	CODE IDENT NO.	
C	23991	ER47C220762

SCALE NONE | SHEET 1 OF 3

47C220762G1	47E220769G1
PART NO.	NEXT ASSY

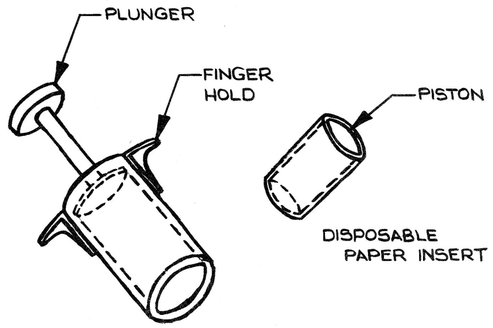
FN903-F (5-68)
PRINTED IN U.S.A.

SIZE C ER47C220762 REV

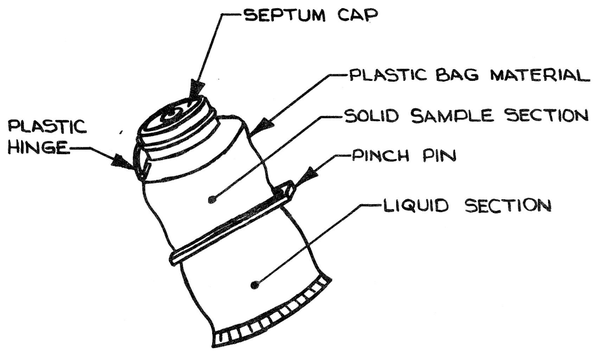
DIST TO

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED



(17) DEVICE, FECAL SAMPLING



(20) CONTAINER, STORAGE, DILUTE/MIX

VENDOR NOTES

A. AMERICAN OPTICAL CORP
BUFFALO, N.Y.
B. AMES LABORATORIES CO
ELKHART, IND
C. ARTHUR H. THOMAS
PHILA., PA
D. FISHER SCIENTIFIC
PHILA., PA
E. BECTON, DICKENSON & CO.
RUTHERFORD, N.J.
F. BALTIMORE BIOLOGICAL LABORATORIES
COCKEYSVILLE, MD
G. ROCHE DIAGNOSTICS
NUTLEY, N.J.
H. REYNYERS & SON
CHICAGO, ILL

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
				2-668-50	34	CAPILLARY TUBE SEALER (SEAL EASE)	D
				13-093	33	LOOP HOLDER	D
			1	47C220762P32	32	SYRINGE, URINE COLLECTION 10 ML	
			1	47C220762P31	31	TUBE, TRANSFER	
			7	8-757-105	30	PLATE, AGAR CONTACT - 50 X 12MM (FALCON)	D
			1	47C220762P29	29	SAMPLER, AIR	H
			1	47C220762P28	28	MATRIX, IDENTIFICATION, COLOR REACTION	G
			1	47C220762P27	27	ENTEROTUBE, SUBCULTURE DEVICE	G
			8	8-757-105	26	PLATE, CULTURE - 50 X 12MM (FALCON)	D
			1	60457	25	APPLICATOR, ANTIBIOTIC DISC	F
			1	47C220762P24	24	TOWELETTE, DECONTAMINATION	
			2	47C220762P23	23	SPREADER	
			1	47C220762P22	22	DEVICE, WET STAIN	
			2	13-102	21	LOOP, INOCULATION - 2 MM I.D.	D
			8	47C220762P20	20	CONTAINER, STORAGE, DILUTE/MIX	
			5	3419-C	19	SWAB - COTTON, TIPPED	C
			1	47C220762P18	18	HOLDER, SWAB	
			1	47C220762P17	17	DEVICE, FECAL SAMPLING	
			1	2-674	16	LANCET	D
			1	6894	15	SWAB, ALCOHOL	E
			1	47C220762P14	14	SYRINGE ADAPTER, LIQUID WASTE INTERFACE	
			1	9-790	13	PAPER, BLOTTING (FILTER PAPER) 5½ CM	D
			2	47C220762P12	12	SLIDE, WET STAIN	
			3	47C220762P11	11	TUBE, ENCLOSED CAPILLARY	
			3	2-668-65	10	TUBE, CAPILLARY - 75MM - NON HEPARINIZED	D
			2	12-542	9	SLIP, COVER - 22 MM SQUARE #1	D
			2	47C220762P8	8	SLIDE, PRE-STAIN	
			1	5146515	7	FILTER, URINE - NUCLEPORE MEMBRANE 5U 25MM	C
			1	AM2590	6	CHART, COLOR, URINE (WITH DIP STICKS)	B
			1	AM2590	5	TEST PACKAGE, BILIRUBIN	B
			1	AM2810	4	DIP STICK, URINE COLOR	B
			1	47C220762P3	3	FILTER ASSEMBLY, URINE	
			1	10400	2	REFRACTOMETER	A
		X		47C220762G1	1	ASSEMBLY	

REQUIREMENTS PER ASSY

LIST OF MATERIAL

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
ALL SURF. ✓
MATERIAL—

SIGNATURES	DAY	MO	YR
DRAWN J. Swipas	12	10	70
CHECKED	22	10	70
[redacted] RELEASED PCQR	10	11	70
ENGRG DBWright	4	11	70
[redacted]	4	11	70
[redacted]	23	10	70
	4	11	70
	5	11	70

GENERAL ELECTRIC
SPACE SYSTEMS — LOC. PHILA., PA

PROCEDURES AND MEASUREMENT EQUIPMENT, MICROBIOLOGICAL/ DIRECT OBSERVATION MODULE LA S/S IMBLMS B4

SIZE	CODE IDENT NO.	
C	23991	ER47C220762

SCALE 1/1 | SHEET 2 OF 3

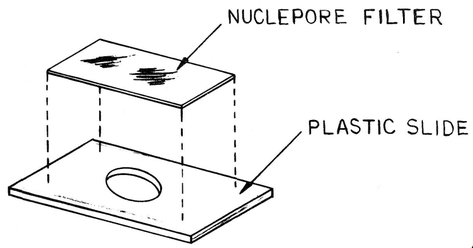
SIZE C ER47C220762 REV

DIST TO

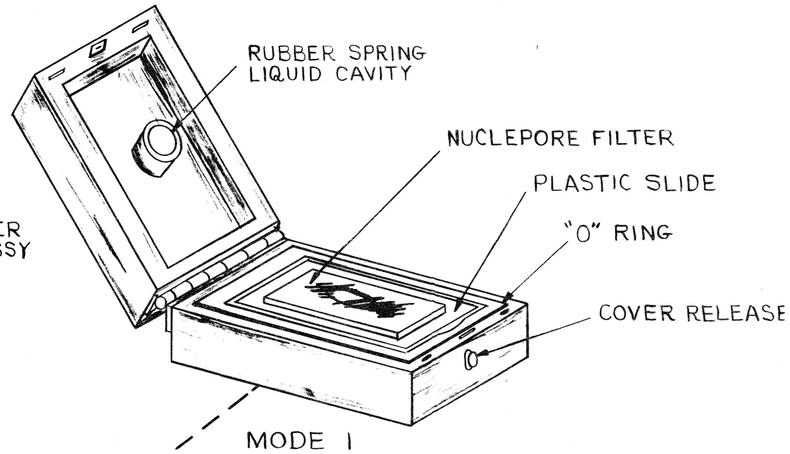
SIZE		REV
C	ER47C220762	

REVISIONS

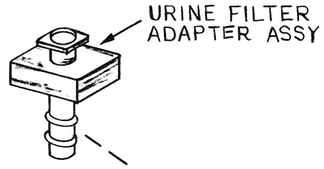
ZONE	LTR	DESCRIPTION	DATE	APPROVED



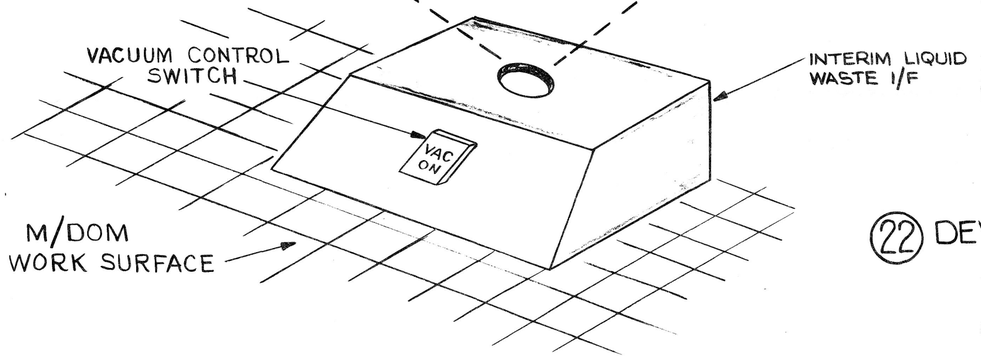
FILTER/SLIDE CONFIGURATION



MODE 1



MODE 2



(22) DEVICE, WET STAIN

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN J. Burgess	20	10	70
CHECKED [illegible]	22	10	70
~~ISSUED~~ RELEASED [illegible]	10	11	70
ENGR D. Wright	20	10	70
[illegible]	4	11	70
MATLS J. A. Gerting	20	10	70
[illegible]	22	10	70
[illegible]	23	10	70

GENERAL ELECTRIC
SPACE SYSTEMS ~~DIV~~ LOC. PHILA., PA

PROCEDURES AND MEASUREMENT EQUIPMENT, MICROBIOLOGICAL/ DIRECT OBSERVATION MODULE LA S/S IMBLMS B4

SIZE	CODE IDENT NO.	
C	23991	ER47C220762

SCALE NL | SHEET 3 OF 3

DIST TO

SIZE C ER47C220762 REV

FOLD

FN903 F (11-68)
PRINTED IN U. S. A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

CABIN AIR

VENTILATION BYPASS VALVE

MANUAL

PRESSURE GAGE (MECHANICAL)

DIFFERENTIAL PRESSURE SENSOR

SIGNAL CONDITIONER

DIFFERENTIAL PRESSURE

REMOTE DATA CONTROL UNIT

SUBJECT

LBNP ENCLOSURE

BODY SEAL

AIR PUMP

MOTOR

AIR RETURN TO CABIN

OVER PRESSURE SWITCH

SUBJECT OVER-RIDE SWITCH

POWER RELAY

OR GATE

TIME DELAY

POWER AMPLIFIER

SERVO COMPENSATION AMPLIFIER

Σ AMPLIFIER

PRESSURE CONTROL (LOCAL)

MODE SELECTOR

REMOTE CONTROL OF DIFFERENTIAL PRESSURE & MOTOR-ON/OFF

+24V +15V -15V +5V

POWER CONDITIONER EMI CONTROL CIRCUIT BREAKERS

MOTOR CONTROL (LOCAL)

MODE CONTROL (LOCAL)

REMOTE STATUS INDICATOR

REMOTE DATA CONTROL UNIT

+28 VDC

LBNP CONTROL MODULE

LEGEND

--- PNEUMATIC CONNECTION

——— ELECTRICAL CONNECTION

PRELIMINARY

47D220763	47E222811G1
47D220763	47E222810G1
DWG NO	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	28	9	70
CHECKED	30	9	70
ENGRG Released per ECP	16	11	70
PROJ	30	9	70
QUALITY	30	9	70
MFG	1	10	70
	1	10	70
	1	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC. PHILA., PA

DIAGRAM, SIGNAL FLOW
LBNP SE 5/5
IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D220763

SCALE ~ SHEET 1 OF 1

DIST

REV

SIZE D ER47D220763

FOLD

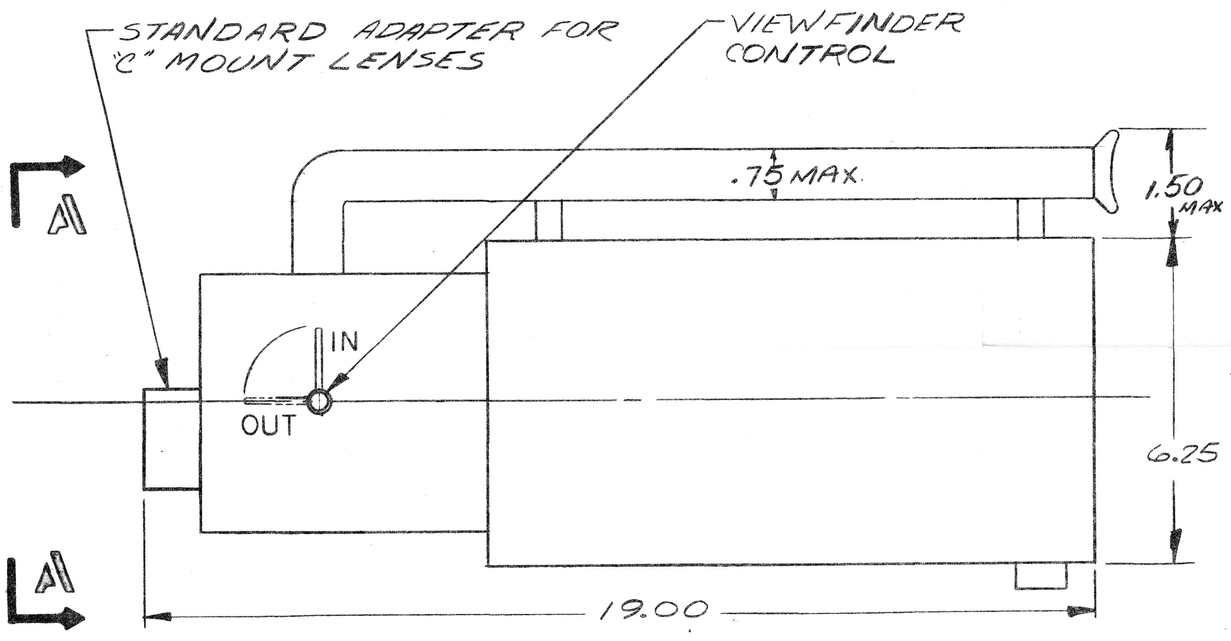
FN-604-F D-68
PRINTED IN U.S.A.

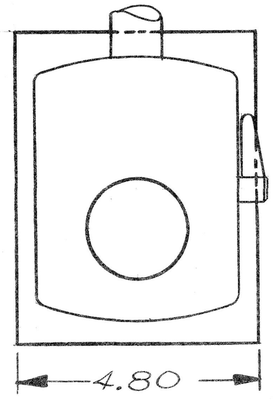
SIZE		REV
C	ER47C220764	

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED

PRELIMINARY





VIEW A-A

(P1)

NOTES
1. SOURCE: CBS LABORATORIES STAMFORD CONN.
2. MANUFACTURES PART NO.- LATER
3. MARK PART WITH THE FOLLOWING INFORMATION:
GE 47C220764 P1
VENDORS NAME & IDENTIFICATION
4. PART TO CONFORM TO GE SPEC 70SD5373

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5373	TV CAMERA SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s). N/A
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

SIMILAR TO CBS MINICAM MARK XII CAMERA

47C220764 P1	47E220696G1
PART NO	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN E.G. Mangel	30	9	70
CHECKED Mikael	2	10	70
RELEASED J.B. PCER	10	11	70
ENGR J.M.	2	10	70
MFG T. Whelan	2	10	70
R.D.G. (MGR)	2	10	70
- N.J. Mitchell	2	10	70

GENERAL ELECTRIC
SPACE SYSTEM ~~DEPT~~ LOC PHILA., PA

CAMERA, COLOR, TV
CAD S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
C	23991	ER47C220764

SCALE 1/2 SHEET 1 OF FIN

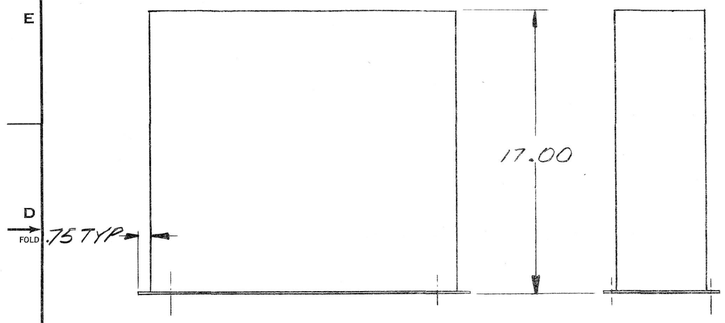
DIST TO

REV ER47C220764 SIZE C

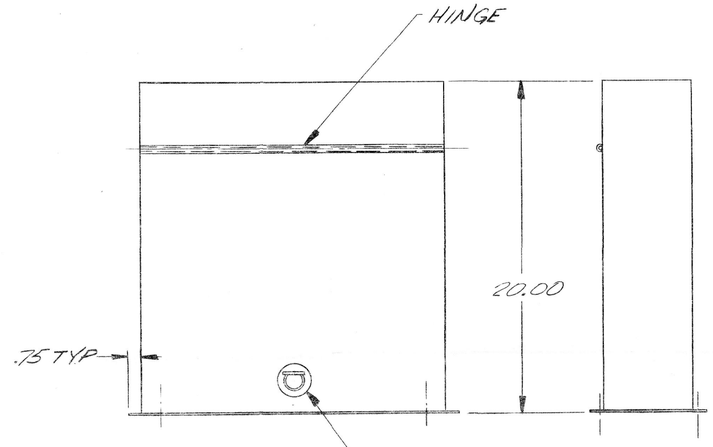
FOLD

FN 903-F (3-68)
PRINTED IN U.S.A.

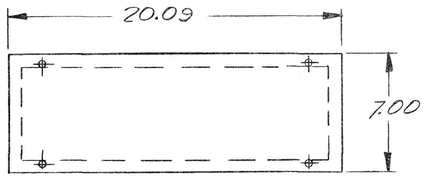
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

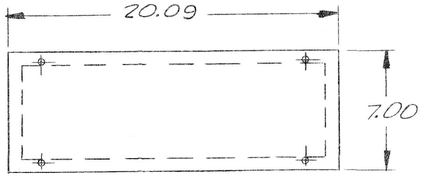


(P1A) VIDEO RECORDER



(P1B) TAPE DECK





NOTES
1. SOURCE : CBS LABORATORIES
STAMFORD, CONN.
2. MANUFACTURES PART NO. LATER
3. MARK PART WITH THE FOLLOWING INFORMATION:
GE A7D220765 P1A OR P1B AS APPL
VENDOR'S NAME & PART NUMBER
4. PART TO CONFORM TO GE SPEC 70SD5376

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5376	VIDEO RECORDER MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

SIMILAR TO:
RCA "ERTS" RECORDER
RCA "ADVISER" RECORDER

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

PRELIMINARY

47D220765 P1B	47E220697G1
47D220765P1A	47E220697G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN			70
CHECKED	19	10	70
ENGRG RELEASED PCLR	10	11	70
ENGRG	19	10	70
MFG	20	11	71
	20	10	71
	21	10	70
	21	10	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT. LOC. PHILA., PA

VIDEO RECORDER
CAD S/S
IMBLMS 84

SIZE	CODE IDENT NO.	
D	23991	ER47D220765

SCALE 1/2 SHEET 1 OF FIN

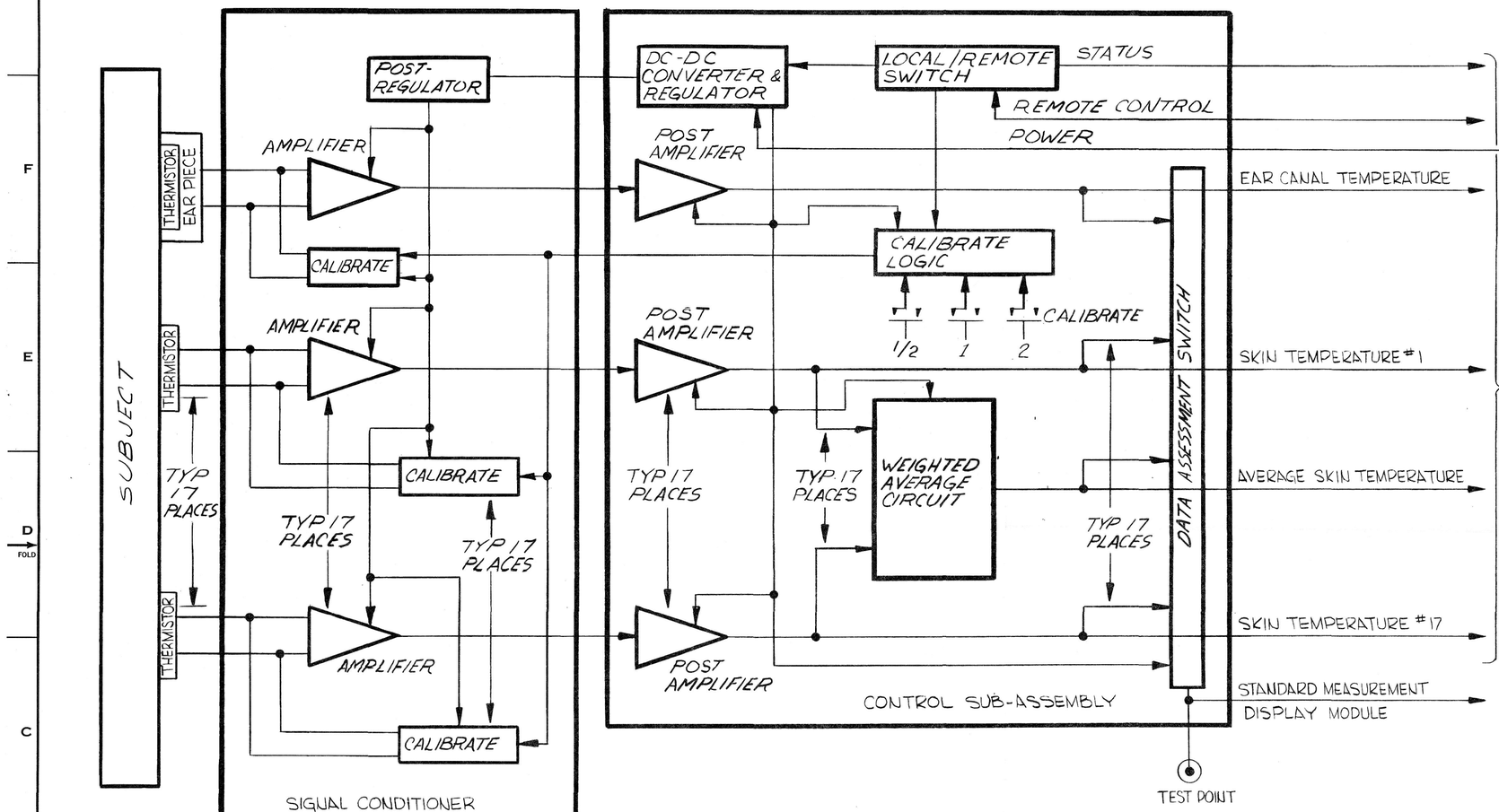
DIST

SIZE D ER47D220765 REV

FN-004-F 3-68 PRINTED IN U.S.A.

SIZE D FR47D220766 REV

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



PRELIMINARY

47D220766	47E220727G1
DWG NO	NEXT ASSY

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	2	10	70
CHECKED	2	10	70
APPROVED RELEASED ECO	10	11	70
ENGRG	2	10	70
	2	10	70
	2	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC. PHILA., PA

DIAGRAM, SIGNAL FLOW TEMPERATURE MODULE PE 5/5 IMBLMS 84

SIZE	CODE IDENT NO.	
D	23991	FR47D220766

SCALE — SHEET 1 OF FIN

DIST TO

FN-864-F 3-69
PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

SUBJECT

ESOPHOGEAL BALLOON

SEE NOTE 1

PRESSURE TRANSDUCER

MOUTHPIECE

TEMP SIGNAL CONDITIONER

REBREATHER BAG

ESOPHOGEAL/ MOUTH PRESS. SIGNAL CONDITIONER

VENT VALVE DRIVER

INSPIRATION SPIROMETER

0-5V

TRIGGER RESET

TEMP SIGNAL CONDITIONER

CALIBRATION

CALIBRATION

TEMP SIGNAL CONDITIONER

0-5V

EXPIRATION SPIROMETER

TRIGGER RESET

VENT VALVE DRIVER

VOLUME MEASUREMENT ASSY

28VDC

CALIBRATE SWITCH

28VDC

SPIROMETER/ MOUTHPIECE SWITCH

K1

MASS SPEC ASSEMBLY

MASS SPEC

EXPIRATION SPIROMETER OUTLET

CALIBRATION GASES

PO_2 (0-5V)

PCO_2 (0-5V)

PN_2 (0-5V)

PH_e (0-5V)

PCO (0-5V)

PH_2O (0-5V)

ELECTRONICS ASSEMBLY

DIFFERENTIATOR

INTEGRATOR

V_I

K1

TRIGGER

INTEGRATOR

DIFFERENTIATOR

DIVIDE

(T_I)

V

DIFFERENTIATOR

TRIGGER

INHALATE/ EXHALATE SWITCH

K1

V

MULTIPLY

DIVIDE

SUBTRACT

DIVIDE

MULTIPLY

K1

K2

O_2 CONSUMPTION/ CO_2 PRODUCTION SWITCH

DIFFERENTIATOR

INTEGRATOR

DATA ASSESSMENT SWITCH

K=0.359

O_2 CONSUMPTION

CO_2 PRODUCTION

+15VDC

+5VDC

-15VDC

PRE-REGULATOR

POWER SUPPLY

28V RET

+28VDC

K1

K2

CALIBRATION SIGNAL

CALIBRATION SIGNAL

REBREATHER GAS TEMP

MOUTH/ESOPHOGEAL PRESS

MAX. INSPIRATORY FLOW RATE

TIMED INSPIRATORY VOLUMES

INSPIRATORY VOLUMES

RESPIRATORY RATE

INSPIRATORY/EXPIRATORY TIME

TO DATA ACQUISITION & DISTRIBUTION S/S

TO STANDARD MEASUREMENT DISPLAY MODULE

TO EP & SD S/S

EXPIRATORY VOLUMES

MAX. EXPIRATORY FLOW RATE

TIMED EXPIRATORY VOLUMES

TO DATA ACQUISITION & DISTRIBUTION S/S

PRELIMINARY

NOTES:

1. PRESSURE TRANSDUCER IS USED TO SENSE EITHER MOUTH OR ESOPHOGEAL PRESSURE. VALVE DELINEATION SHOWN IS SCHEMATIC ONLY.

47E220767	47E220740G1
DWG NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	2	10	70
CHECKED	7	10	70
DESIGN ELECTRONICS	12	11	11
ENGR	8	10	70
QUAL	8	10	70
ENGR	9	10	70

GENERAL ELECTRIC
SPACE SYSTEMS loc PHILA. PA

DIAGRAM SIGNAL FLOW
RESPIRATORY MODULE
PE S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220767

SCALE 1/4 SHEET 1 OF 1

REV E ER47E220767 REV E ER47E220767 REV D

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

TO BALLISTO CARDIOGRAM & BIO TRANSPONDER SIGNAL CONDITIONER UNIT
31 INPUTS(ANALOG) 8 INPUTS(EVENTS)

ANTENNA

TRANSMITTER ON/OFF

DUPLEXER
255 MHZ
230 MHZ

POWER AMP
MIXER
VCO 30 MHZ
LPF 2 MHZ

CRYSTAL OSCILLATOR X2 225 MHZ
POWER AMPLIFIER
LIMITING IF
BAND PASS FILTER 5 MHZ
DISCRIMINATOR 5 MHZ
DOUBLE THRESHOLD
OR

FET PRE-AMP
MIXER

DATA OUT
SELECT

ANALOG MUX
CONVERT
A/D CONVERTER
SELECT
DIGITAL MUX
DATA ADDRESS DECODE
SYNC DETECT
TIMING AND CONTROL
LOAD
SHIFT
DATA IN
REGISTER
CLOCK

CHARGING INPUT FROM BASE STATION

COMMAND ADDRESS DECODE
SELECT
COMMAND DECODE

POWER GATES
+15VDC
-15VDC
POWER SUPPLY BATTERIES
CHARGING INPUT

1/ CALIBRATE
2/ GAIN CONTROL
2/ CALIBRATION
} TO BIO TRANSPONDER SIGNAL CONDITIONER UNIT
} TO BALLISTO CARDIOGRAM

2/
2/
2/
2/
} POWER INPUTS TO BIO TRANSPONDER SIGNAL CONDITIONER UNIT

TRANSPONDER UNIT

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5289	DATA TRANSPONDER MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

ADDRESS/COMMAND BUS

THRESHOLD CIRCUITS
M
VCO 30 MHZ

MIXER
POWER AMP
230 MHZ
ANTENNA

CRYSTAL OSCILLATOR X2 260 MHZ
POWER DIVIDER
DUPLEXER

MIXER
255 MHZ

BAND PASS FILTER 5 MHZ
LIMITING I.F.
DISCRIMINATOR 5 MHZ
COMPARATOR
LINE DRIVER
TRANSFORMER

ADDRESS/DATA/STATUS BUS

TO TRANSPONDER

CHARGING INPUT
BATTERY CHARGING UNIT
+28VDC
POWER SUPPLY
+15VDC
-15VDC

+28 V DC FROM ELECTRICAL POWER & SIGNAL DISTRIBUTION S/S

BASE STATION

PRELIMINARY

47D220768	47D222817G1
DWG NO	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN T.F. KAMPF	1	10	70
CHECKED	7	10	70
RELEASED PCSR	10	11	70
ENGR	7	10	70
	7	10	70
	7	10	70
	7	10	70
	7	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC. PHILA PA

DIAGRAM SIGNAL FLOW
DATA TRANSPONDER MODULE
DAD S/S
IMBLMS B4

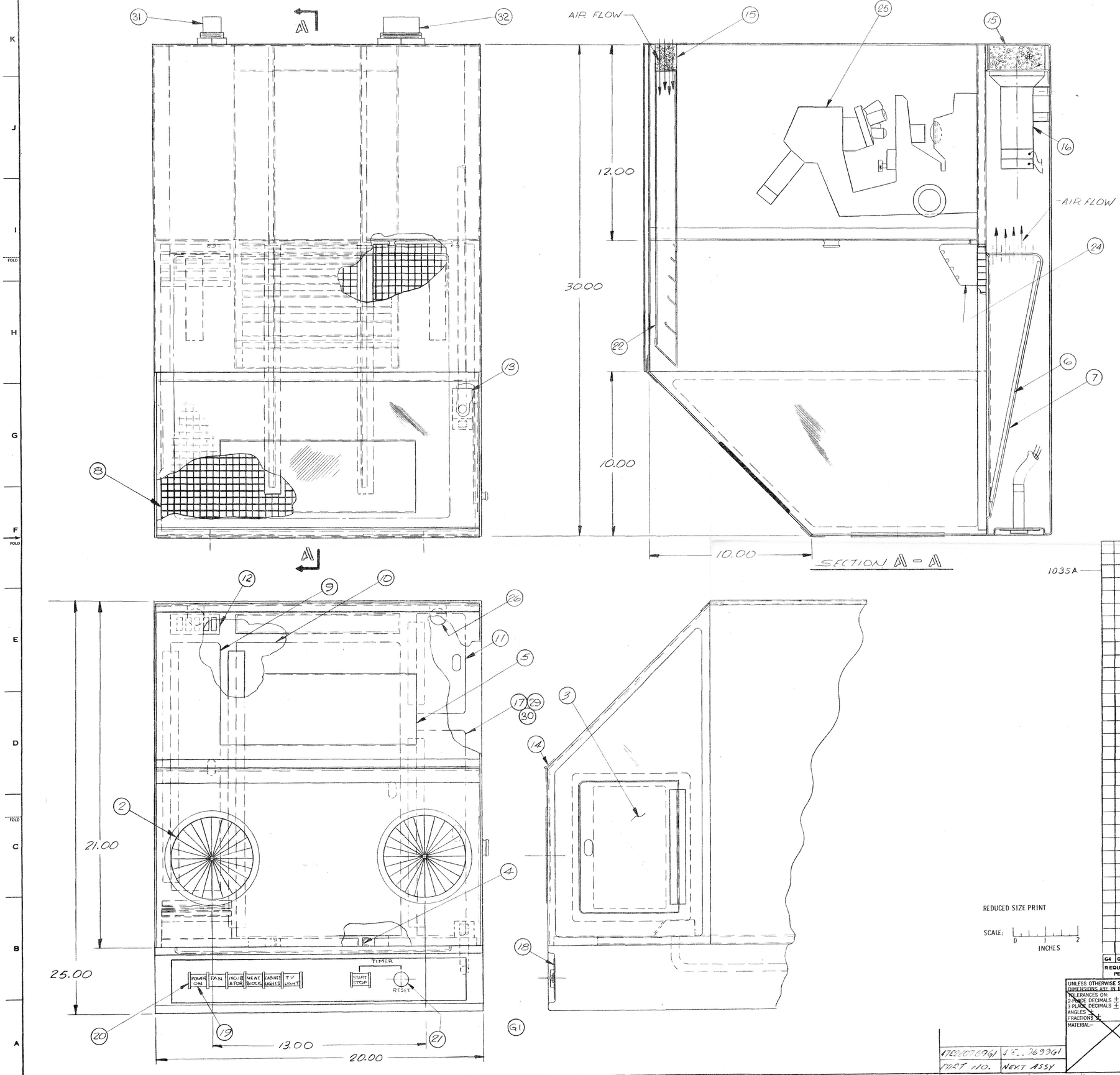
SIZE	CODE IDENT NO.	
D	23991	ER47D220768

SCALE: SHEET 1 OF 1

DIST TO

SIZE D ER47D220768 REV

FORM 4004-F 5-69 PRINTED IN U.S.A.



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5252	LABORATORY ANALYSIS SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.	
70 SD 5390	LABORATORY ANALYSIS SUBSYSTEM DESIGN CONCEPT SELECTION.	
70 SD [illegible]9	MICROBIOLOGICAL/DIRECT OBSERVATION MODULE SPECIFICATION.	
70 SD 5287	MODULARITY GUIDELINES.	
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).	3-1-1-1,2,3 & 4
70 SD 5243	SAFETY DESIGN REQUIREMENTS.	3-1-1-1,2,3,4,5,6,7 & 8
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.	3-1-4-1 3-2-5-1,2 & 3 3-2-2-1,2,3 & 4

NOTES:

1. PARTS TO CONFORM TO GE SPEC 70SD5340

VENDOR NOTES:

A. MASTER SPECIALITIES CO., COSTA MESA, CORP. (OR EQUAL)
B. CONTROLS CO. OF AMERICA, FOLCROFT, PA. (OR EQUAL)
C. BENDIX ELECTRICAL COMPONENT DIV., SIDNEY, NEW YORK
D. ROTRON INC., WOODSTOCK, N.Y. SIMILAR TO MODEL AXIMAX 2 MODEL NO. 3673S, USE WITH BATAC DC INVERTER NO. E2902.
E. BECKMAN INST., INC., FULLERTON, CALIF.
F. EDMUND SCIENTIFIC CO., BARRINGTON, N.J.
G. MINE SAFETY APPLIANCES CO., PITTSBURGH, PA. SIMILAR TO MODEL 15-82620.
H. AMERICAN OPTICAL, BUFFALO, N.Y. - DESIGN SIMILAR TO AO PHASE STAR SERIES 10 MOD. P4.

PRELIMINARY

1	LJT07RE17-35P	32	CONNECTOR	C
1	LJT07RE-9-6P	31	CONNECTOR	C
1	47E220769P30	30	CAMERA, 35MM & MICROSCOPE ADAPTER	H
1	47E220769P29	29	CAMERA, TV ADAPTER	
1	47C220766G1	28	PROCEDURES & MEAS EQUIPT	
X	47E220695	27	DIAG, SIGNAL FLOW	
2	47E220769P26	26	LIGHT, FLUORESCENT	
1	47E220769P25	25	MICROSCOPE	H
1	47E220769P24	24	BLOCK, HEATING	
1	47C220766G1	23	PROCEDURES & EQUIP MEASURE.	
1	47E220769P22	22	LAMINAR FLOW INLET PLENUM & GRILLE)	
1	W76D1 B	21	PUSH BUTTON	B
9	90E505	20	BARRIER	A
7	DCK-A2C93-NR11	19	SWITCH, ILLUMINATED, PUSH BUTTON	A
1	47E220769 P18	18	CONTROL PANEL	
1	P17	17	STORAGE CHAMBER	
2	P16	16	BLOWER (AXIMAX 2)	D
2	P15	15	FILTER (HEPA)	G
2	47E220769 P14	14	HINGE	
1	47E220769 P13	13	LIQUID WASTE INTERFACE	
1	4050	12	CLOCK	E
1	47E220769P11	11	STORAGE CHAMEER	
1	P10	10	MICROSCOPE STORAGE CHAMBER	
1	P9	9	INCUBATOR CHAMBER	
1	P8	8	WORK GRATE (MAGNETIC)	
1	P7	7	LIQUID TRAP SHIELF	
1	47E220769P6	6	NEOPRENE LINER	
1	60,635	5	4 POWER LENS	F
2	47E220769P4	4	MICROSCOPE TRACK	
1	P3	3	TRANSPORT HATCH	
8	P2	2	HAND PORT ASSY	
X	47E220769 G1	1	ASSEMBLY	

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASS'Y.						LIST OF MATERIAL	

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

1035A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF. ✓	SIGNATURES	DAY	MO	YR
		DRAWN	13	10	70
		CHECKING	11	12	70
		ENGR. APPROV.	12	11	70
		MFG APPROV.	12	11	70
		ENGR.	12	11	70
			14	12	70
			17	12	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA
MICROBIOLOGICAL/DIRECT OBSERVATION MODULE
-H S/S
IMBLMS 64

SIZE	CODE IDENT NO.	
E	02991	ER47E220769

SCALE 1/2 SHEET 1 OF 1 SH

47E220769G1 — PART NO. — NEXT ASSY

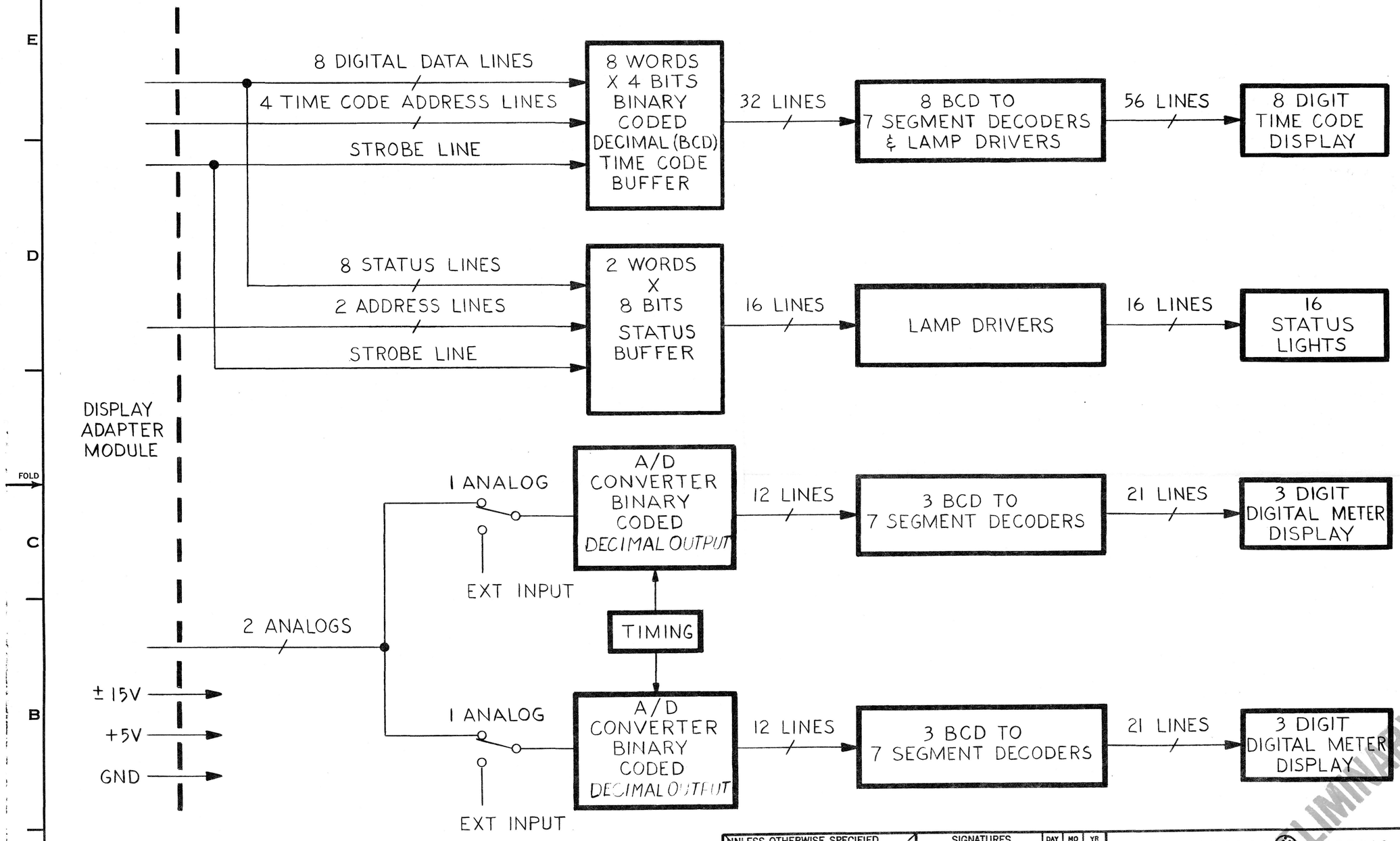
REV: LTR 769G — LTR 769G1

PRINTED IN U.S.A.

SIZE		REV
C	ER47C220770	

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED



PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN J. Hill	7	10	70
CHECKED Jim Nash	8	10	70
RELEASED P.C.E.	10	11	10
ENGRG			
	8	10	70
	9	10	70
	9	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

DIAGRAM, SIGNAL FLOW
METER & STATUS DISPLAY
CAD S/S IMBLMS B4

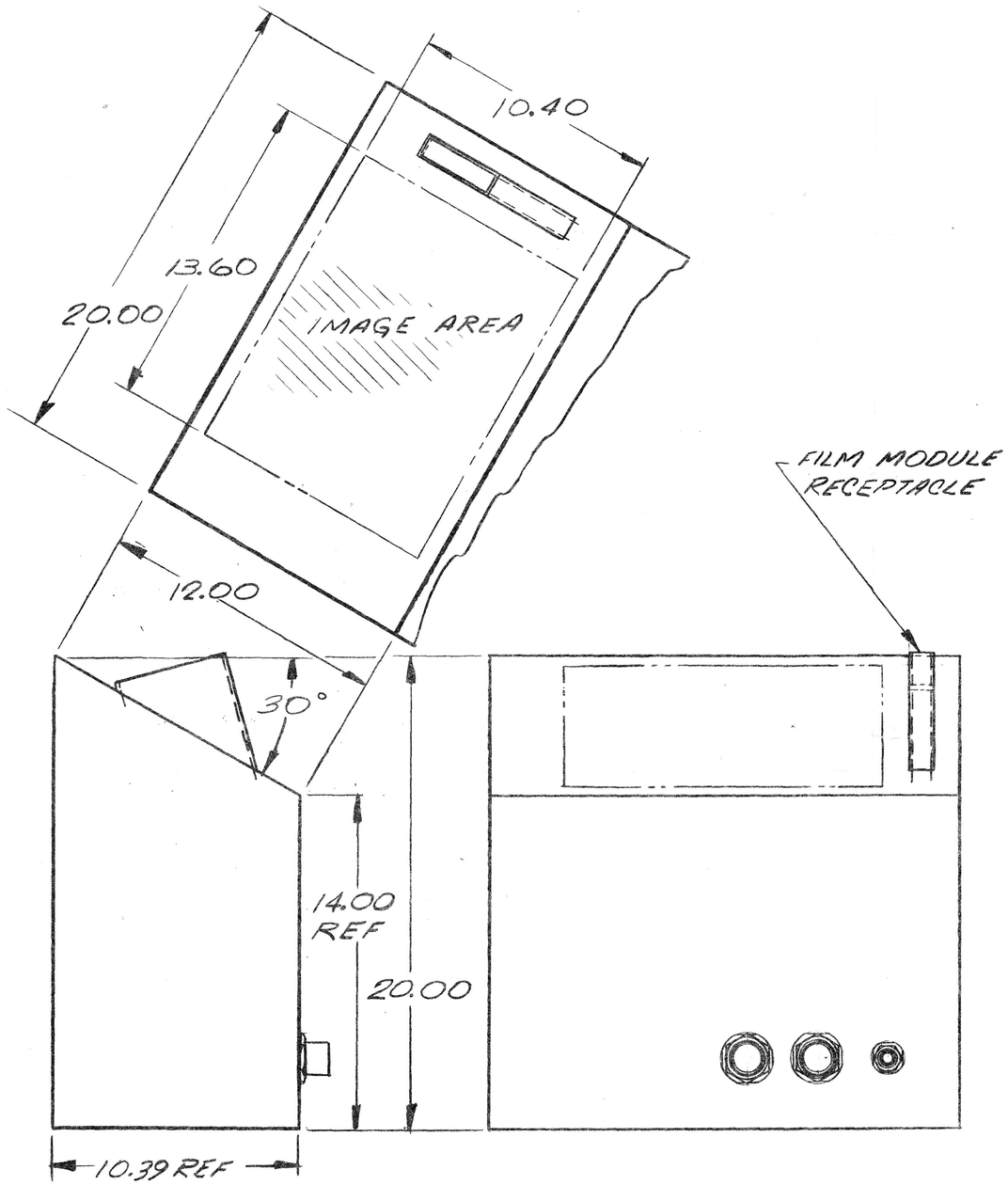
SIZE	CODE IDENT NO.	
C	23991	ER47C220770

SCALE NONE | SHEET 1 OF 1

47C220770	47D2[illegible]81[illegible]G1
DRAWING NO.	NEXT ASSY

FN 903-F (3-68)
PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



PRELIMINARY

NOTES
1. PART TO CONFORM TO GE SPEC 70SD5379

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s). N/A
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
70 SD5379	VISUAL DISPLAY MODULE SPECIFICATION.

SIMILIAR TO
(1) MODEL 5325A LEAR SIEGLER INC.
(2) MICROFILM STORAGE & DISPLAY UNIT (CONTRACT NAS 9-8144) MARTIN MARIETTA CORP.

(P1)

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47C220771P3	47E222821G1
47C220771P2	47E222821G3
47C220771P1	47E220696G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN E.S. Mangold	7	10	70
CHECKED M. Thurston	9	10	70
RELEASED pcfc	10	11	70
ENGRG J. Keppel	9	10	70
B.J. Mininthy	12	10	70
W.F. Tomlinson	12	10	70
R.J. DiGuglielmo	12	10	70
M.A. Hertzel	12	10	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT LOC. PHILA, PA

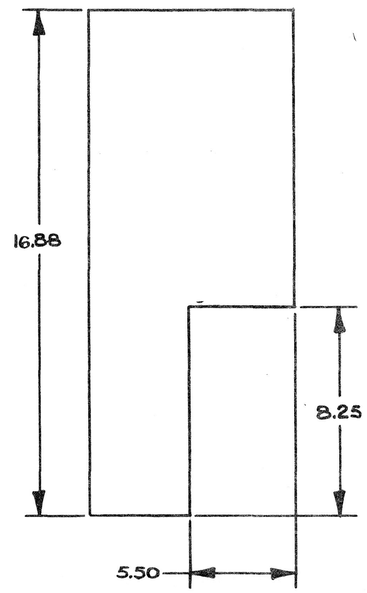
VISUAL DISPLAY PROJECTOR
CAD S/S
IMBLMS-B4

SIZE	CODE IDENT NO.	
C	23991	ER47C220771
SCALE 1/4		SHEET 1 OF 2

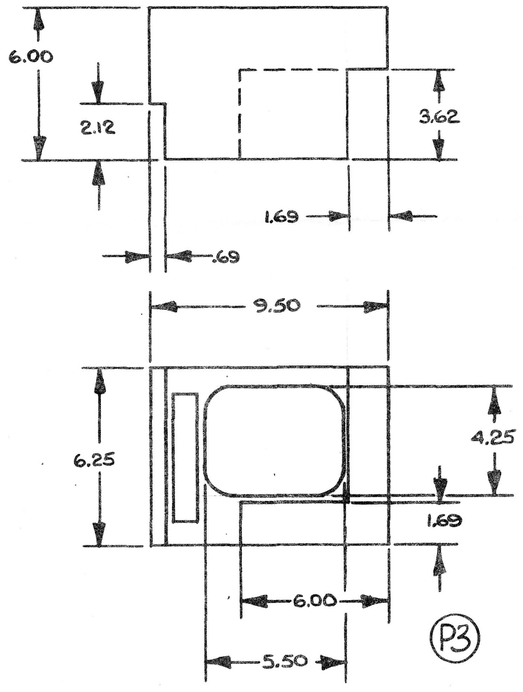
DIST TO

SIZE		REV
C	ER47C220771	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



(P2)



(P3)

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES--
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
ALL SURF. ✓
MATERIAL--

SIGNATURES		DAY	MO	YR
DRAWN	J.t.Swipes	30	10	70
CHECKED		3	11	70
RELEASED	R.C.I.E.	10	11	70
ENGRG	J.P. Klippel Jr.	4	11	70
MFG		3	11	70
		4	11	70
		4	11	70
	R.J. Di Giacomo	4	11	70

GENERAL ELECTRIC
SPACE SYSTEMS — LOC. PHILA., PA

VISUAL DISPLAY PROJECTOR CAD S/S IMBLMS B4

SIZE	CODE IDENT NO.	
C	23991	ER47C220771

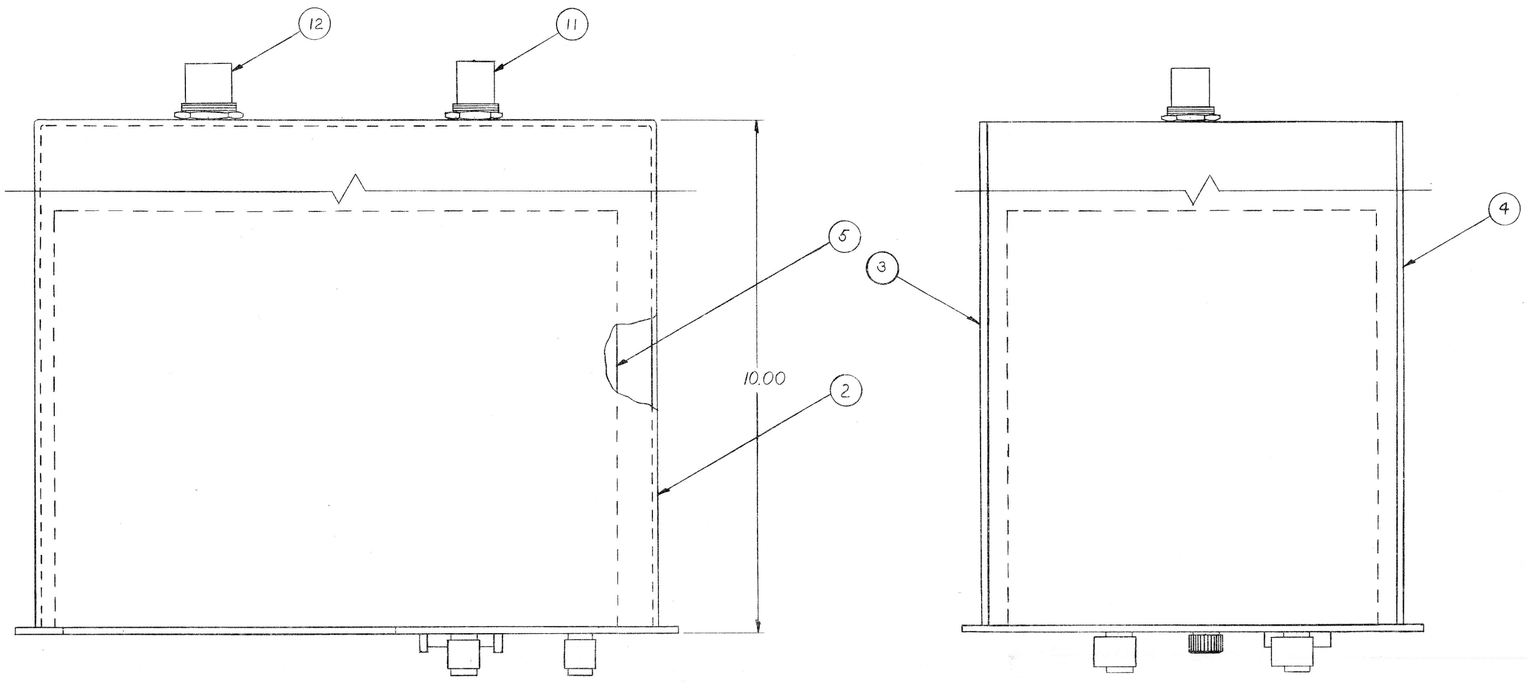
SCALE 1/4 | SHEET 2 OF 2

FN903 F (11-68)
PRINTED IN U. S. A.

SIZE C ER47C220771 REV

DIST TO

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



NOTES:

1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47D220772G NO. OR P. NO. AS APPLICABLE PER 118A1526 CL 21
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. ITEM 5 MUST CONFORM TO GE SPEC 70SD5369

VENDOR NOTES:

A. MASTER SPECIALTIES CO. COSTA MESA, CALIF.

B. OAK MFG CO. CRYSTAL LAKE, ILL.

C. BENDIX ELEC. COMP. DIV. SIDNEY, N.Y.

D. BOURNS INC. RIVERSIDE, CALIF.

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5369	STRIP CHART RECORDER MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

SIMILAR TO:
MODEL 22 DUAL CHANNEL RECORDER
MECHANICS FOR ELECTRONICS, INC
WILMINGTON MASS.

2	3438S	13	POTENTIOMETER	D
1	LJT07RE-11-13P	12	CONNECTOR	C
1	LJT07RE-9-6P	11	CONNECTOR	C
4	90E501	10	BARRIER	A
2	90EA1C4F3J3 WL3N1	9	SWITCH, PUSHBUTTON, ILLUM.	A
2	MS 91528-0N1B	8	KNOB	
3	MS 91528-0K1B	7	KNOB	
3	399322A	6	SWITCH, ROTARY	B
1	47D220772P5	5	RECORDER	4
1	47E222826G14	4	COVER, BOTTOM	
1	47E222826G10	3	COVER, TOP	
1	47E222826G2	2	MODULE	
X	47D220772G1	1	ASSEMBLY	
G4 G3 G2 G1 REQUIREMENTS PER ASS'Y.		IDENTIFICATION NO.	ITEM NO.	DESCRIPTION / SEE NOTE

LIST OF MATERIAL

47D220772G1	47E220697G1		
PART NO.	NEXT ASSY		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN J. KRAIGER	19	10	70
CHECKED A. Lee	21	10	70
RELEASED KBe Pate	14	11	70
ENGRG H. H. Fox	22	10	70
	22	10	70
	22	10	70
R. J. Gerkens	23	10	70
	21	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA.

MODULE, ASSY OF
STRIP CHART RECORDER
CAD S/S
IMBLMS B4

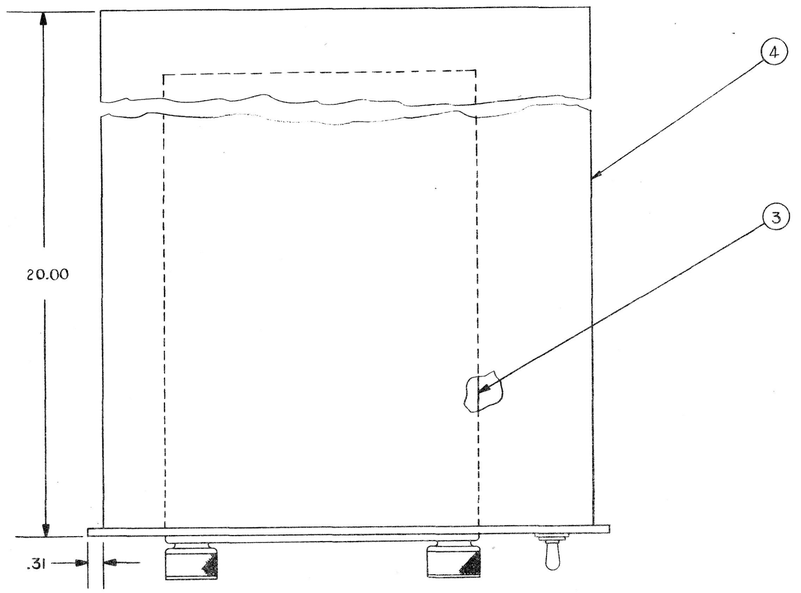
SIZE	CODE IDENT NO.	
D	23991	ER47D220772

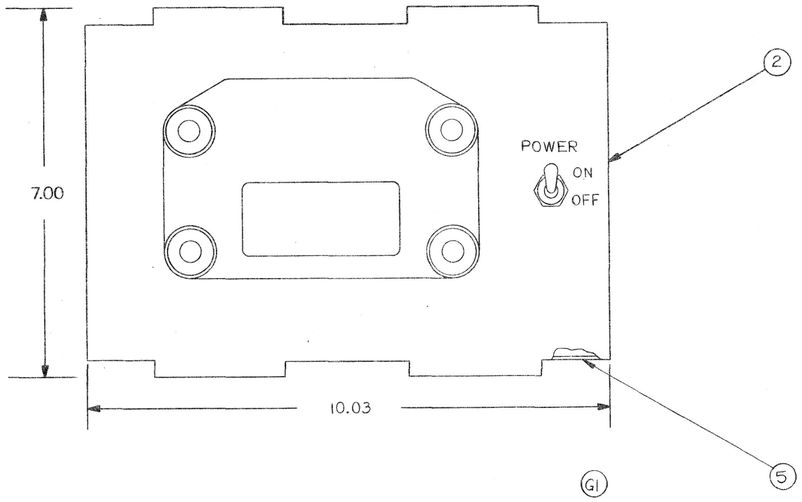
SCALE 1:1 SHEET 1 OF 1

REV D
SIZE D ER47D220772
DIST TO

FM-884-F (1-68) PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





PRELIMINARY

NOTES:

1. ITEM 3 MUST CONFORM TO G.E. SPECIFICATION 70SD5381.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70SD5381	DIGITAL PRINTER SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

MAJOR COMPONENTS

SPACECRAFT TELEPRINTER
NATIONAL CASH REGISTER CO.
McDONNELL DOUGLAS SPEC #61B850018
INTERFACE ELECTRONICS - SIMILAR TO
McDONNELL DOUGLAS SPEC #61B850019

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	REMARKS
						LIST OF MATERIAL	
				X 47E220773G1	1	ASSEMBLY	
				1 47E222826G4	2	MODULE	
				1 47E220773P3	3	PRINTER & ELECTRONICS	
				1 47E222826G12	4	COVER, TOP	
				1 47E222826G16	5	COVER, BOTTOM	

REQUIREMENTS PER ASS'Y.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DESIGN D.D. Moran	9	10	70
CHECKED S. Hunt	13	10	70
APPROVED P.T. Davis	19	11	70
ENGR			
MFG			

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA. PA.

MODULE, ASSEMBLY OF DIGITAL PRINTER
CAD S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E220773

SCALE FULL SHEET 1 OF 1

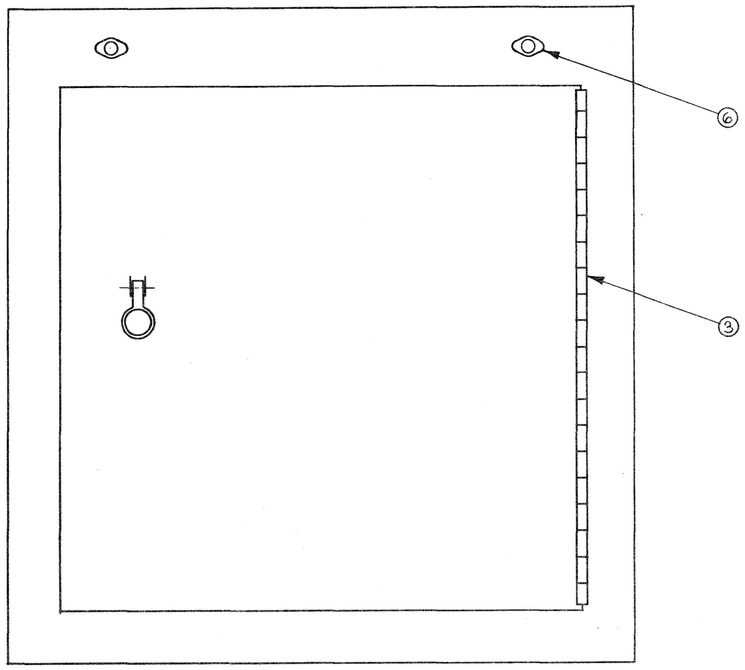
47E220773G1	47E220697G1
PART NO.	NEXT ASSY

USE E ER47E220773 REV -

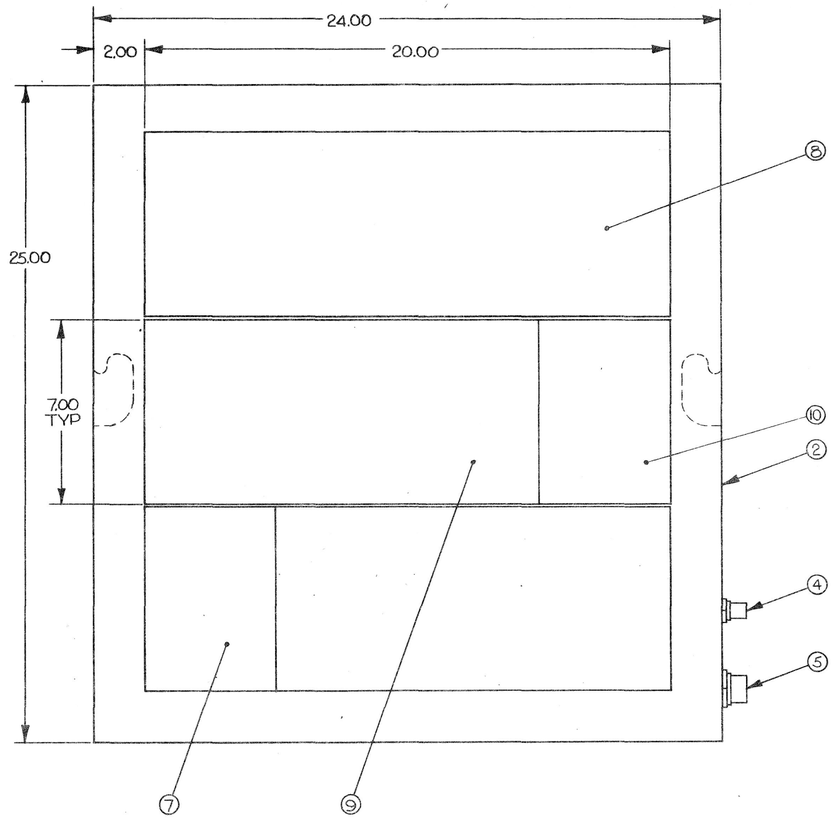
USE E ER47E220773 REV -

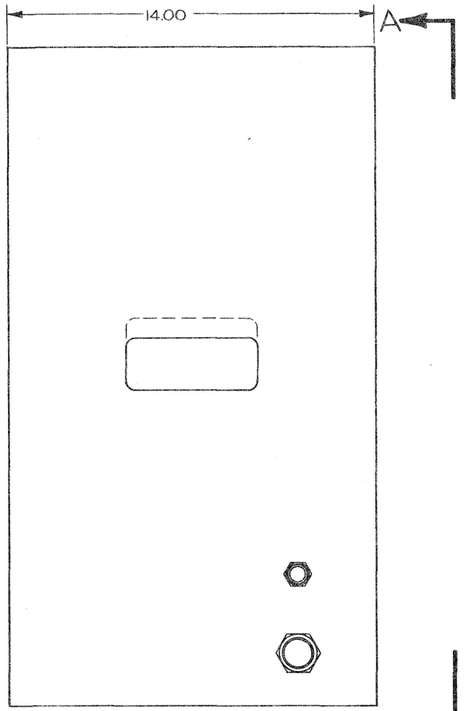
PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



VIEW A-A





NOTES
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK "GE47E222822 (GROUP OR PART NO. AS APPLICABLE) PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. ALL OUTSIDE CORNERS .75R
5. THE MODULE SHOW ON THIS DWG IS ONE OF MANY 7"X20" OR SMALLER PHYSIOLOGICAL MODULES WHICH MAY BE USED IN THIS ASSY.

VENDOR NOTES
A. BENDIX ELECTRICAL COMPONENTS DIV SIDNEY, NEW YORK
B. SPACE-LOK INC BURBANK, CALIF

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

1	47E220725G2	10	NEUROLOGICAL SIGNAL COND	5
1	47E220725G1	9	NEUROLOGICAL MODULE	5
1	47E222821G1	8	STANDARD MEASUREMENT DISPLAY MOD	
1	63E901316G1	7	RDCU	
2	SLR3CD.040	6	INSERT, QUICK RELEASE	B
1	LJT07RE-17-35P	5	CONNECTOR, 55 PIN	A
1	LJT07RE-9-6P	4	CONNECTOR, 6 PIN	A
1	47E222822P3	3	DOOR	
1	47E222822P2	2	CONSOLE	
X	47E222822G1	1	ASSEMBLY	

G4 G3 G2 G1 IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASSY		LIST OF MATERIAL	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	6	11	70
CHECKED	6	11	70
WEIGHTS RELEASED	21	11	70
ENGR	12	11	70
QUAL	6	11	70
PROJ	6	11	70
		11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA

CONSOLE, PORTABLE
IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E222822

SCALE 1/2 SHEET 1 OF 1

47E222822G1	47E220696G1
PART NO.	NEXT ASSY

REV E ER47E222822

REV E ER47E222822

DIST 10

PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

SUBJECT

PEDALS

ECG

SUPPORT & CONSTRAINT

FROM PHYSIOLOGICAL S/S BLOOD PRESSURE MODULE

ECT

HEART RATE 10 SEC AVG

HEART RATE ALARM

DIFFERENTIAL AMPLIFIER

HEART RATE ERROR

GEAR RATIO

CALIBRATION VOLTAGE 3 LINES

TACHOMETER

SUBJECT DISPLAY

UNDER SPEED LIGHT & PEDAL RPM

SIGNAL CONDITIONER

PEDAL RPM

TO RDCU

SERVO COMPENSATION & SELECTOR

HEART RATE COMP

LOAD COMP

COMPENSATION SELECTOR

DIFFERENTIAL AMPLIFIER

POWER AMPLIFIER

LOAD GENERATOR

LOAD RESISTOR

DIGITAL RATE / LOAD 4 LINES

HEART RATE(BPM) SELECT

LOAD(WATTS) SELECT

PROGRAM / TIMER START

MODE SELECT HEART RATE / LOAD / PROGRAMMED

CALIBRATE SELECTOR

CONTROL 2 LINES

CONTROL SELECTOR REMOTE / LOCAL / STANDBY

CONTROL SELECTOR

RATE

RATE

LOAD

RATE

LOAD

TIME

START

MODE

CALIBRATE

LOAD PROGRAMMER

RATE

LOAD

MODE SELECTOR

CALIBRATION VOLTAGE 3 LINES

X

SCALING AMPLIFIER

LOAD (WATTS)

SIGNAL CONDITIONER

LOAD LEVEL

INTEGRATOR

SIGNAL CONDITIONER

INTEGRATED WORK

MODE SELECTOR

PROGRAM STATUS

CONTROL SELECTOR STATUS

LEGEND

LOCATED IN ERGOMETER CONTROLLER

LOCATED IN PEDAL ASSEMBLY

+24V
±15V
±5V
CALIBRATION VOLTAGES

POWER CONDITIONER (CIRCUIT BREAKERS, EMI FILTERS, ETC.)

28VDC

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—

ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN F. Hill	9	10	70
CHECKED M. Hall	13	10	70
RELEASED	10	11	70
ENGR	13	10	70
	13	10	70
	12	10	70
	19	10	70
	11	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA.

DIAGRAM, SIGNAL FLOW
ERGOMETER
SE S/S IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D222800

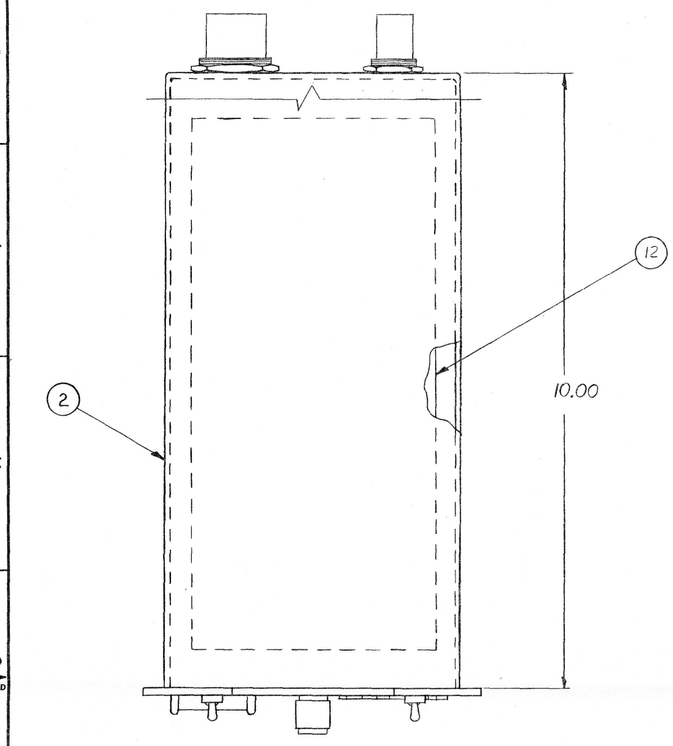
SCALE NONE SHEET 1 OF 1

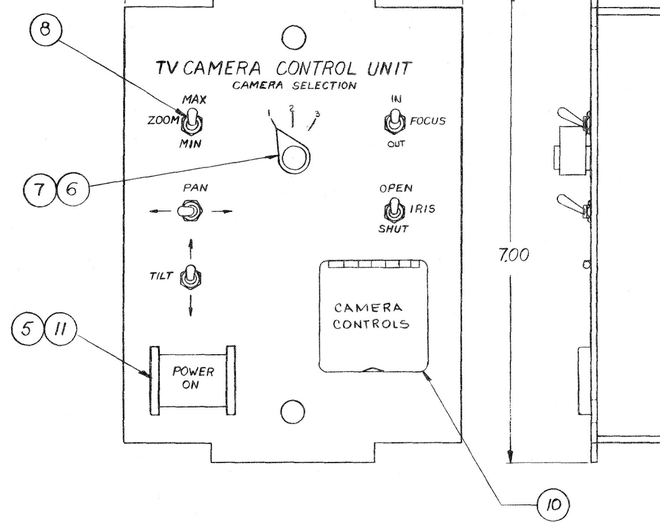
DIST TO

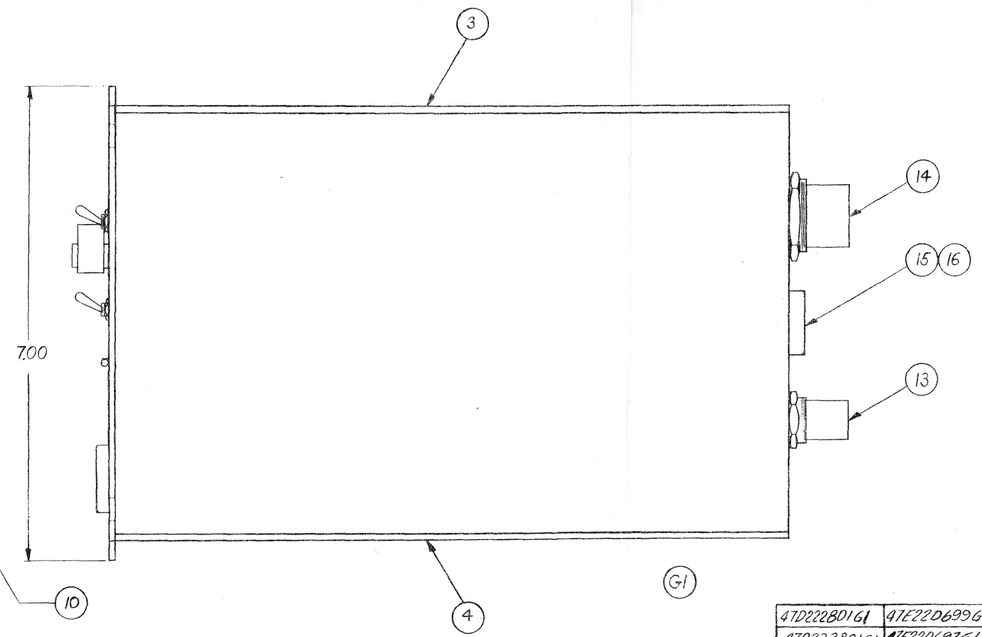
47D222800	47D222824 G1
DRAWING NO.	NEXT ASSY

SIZE D ER47D222800 REV

PN-904-F (5-80) PRINTED IN U.S.A.







NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47D222801G__ NO. OR P. NO. AS APPLICABLE PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. ITEM 12 MUST CONFORM TO GE SPEC 70SD5373.

VENDOR NOTES:
- A MASTER SPECIALTIES CO. COSTA MESA, CALIF.
- B ALCO ELECTRONIC PRODUCTS, INC. LAWRENCE, MASS.
- C OAK MFG CO. CRYSTAL LAKE, ILL
- D BENDIX ELEC. COMP. DIV. SIDNEY, N.Y.
- E HUGHES AIRCRAFT CO. ELEC. PRODUCTS DIV. NEWPORT BEACH, CALIF.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5373	TV CAMERA MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

SIMILAR TO:
CBS MINICAM MARK XII
CAMERA CONTROL UNIT

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED

					REV
1	MRS0010S00BN300	15	CONNECTOR	E	
1	LJT07RE-15-37P	14	CONNECTOR	D	
1	LJT07RE-9-6P	13	CONNECTOR	D	
1	47D222801P12	12	CONTROL UNIT	4	
2	90E505	11	BARRIER	A	
1	47D222801P10	10	COVER, CONTROL ACCESS		
10	CAS178M000	9	CONTACT	E	
5	MSTA-106G	8	SWITCH, TOGGLE, MOMENTARY	B	
1	MS 91528-0K1B	7	KNOB		
1	399223A	6	SWITCH, ROTARY	C	
1	90EAKAF3J1WLINI	5	SWITCH, PUSHBUTTON, ILLUM.	A	
1	47E222825P14	4	COVER, BOTTOM		
1	47E222825G10	3	COVER, TOP		
1	47E222825G2	2	MODULE		
X	47D222801G1	1	ASSEMBLY		

SIZE D ER47D222801

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASS'Y.							

LIST OF MATERIAL

47D222801G1	47E222069G1
47D222801G1	47E222069G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN J. KRAIGER	15	10	70
CHECKED	22	10	70
RELEASED	10	11	70
ENGRG	22	10	70
	22	10	70
	23	10	70
	23	10	70
	26	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

MODULE, ASSY OF
TV CAMERA CONTROL UNIT
CAD 515
IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D222801

SCALE 1:1 SHEET 1 OF 1

DIST TO

PN-696-F II-66 PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

INPUTS FROM MEASUREMENT MODULES

CH #1

CH #2

I LINE

I LINE

ANALOG SWITCHES

I LINE

GATE CONTROL

A/D CONVERTER

8 DATA LINES

GATE CONTROL

CW TRACE BUFFERS

8 LINES

8 LINES

GATING

SHIFT REGISTERS

ADDER

VIDEO AMPL

VIDEO

SEE B & W TV MONITOR SPEC 70SD5375

HORIZONTAL POSITION COUNTER (9 BIT)

MANUAL TIME BASE SELECTION

~10 LINES

TIME BASE COUNTER

9 LINES

STORAGE CONTROL

GATING

SHIFT REGISTERS

ADDER

S R

MANUAL ERASE TIME CONTROL

~4 LINES

÷ n

FRAME PULSE

CLOCK

HORIZONTAL TIMER

VERTICAL TIMER

HORIZ. SYNC

VERT SYNC

DECODE 512

INPUTS FROM MEASUREMENT MODULES

CH #3

CH #4

A/D CONVERTER (BCD)

12 LINES

12 GATES

RAMP GENERATOR

TIMING & GATING

A/D CONVERTER (BCD)

12 LINES

12 GATES

D.P.M. MEMORY 6 W X 4 BITS

MEMORY SCAN & READOUT

7 LINES

SCAN

CHAR. GEN. MEMORY & OUTPUT GAITING

+28V

SEE VDP SPEC 70SD5379

MANUAL CONTROLS

EVENT MEMORY (128 WORD X 8 BITS)

SPECIAL PROGRAMMING CONNECTOR

DATA & ADDRESS 17 LINES

MEMORY WRITE INTERFACE

+28V

POWER SUPPLY

+5V

±15V

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF. ✓	SIGNATURES	DAY	MO	YR
		DRAWN J. KRAIGER	12	10	70
		CHECKED	2	11	70
		RELEASED	12	11	70
		ENGRG	9	11	70
		MFG	14	11	70
		PURCH	16	11	70

GENERAL ELECTRIC

SPACE SYSTEMS — LOC PHILA, PA

DIAGRAM - SIGNAL FLOW

STANDARD MEASUREMENT DISPLAY MODULE

CAD 5/6

IN8LM5 B4

SIZE	CODE IDENT NO.	
E	23991	ER47E222802

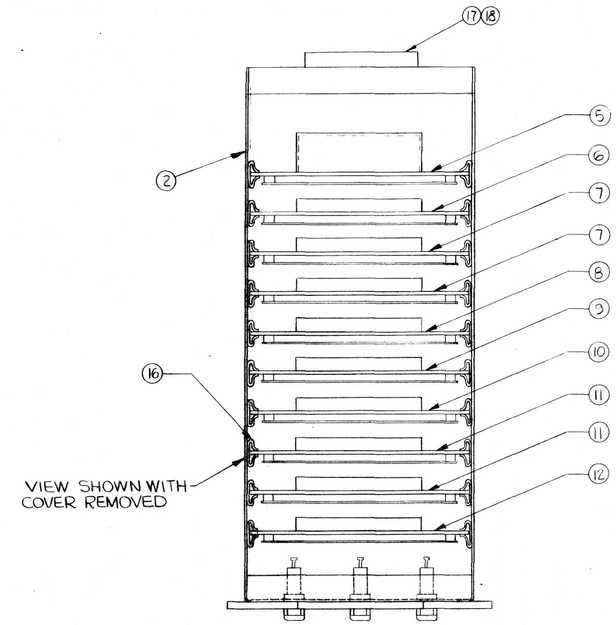
SCALE NL — SHEET 1 OF 1

47E222802	47E222821G1
DWG NO	NEXT ASSY

ER47E222802 REV

ER47E222802 REV

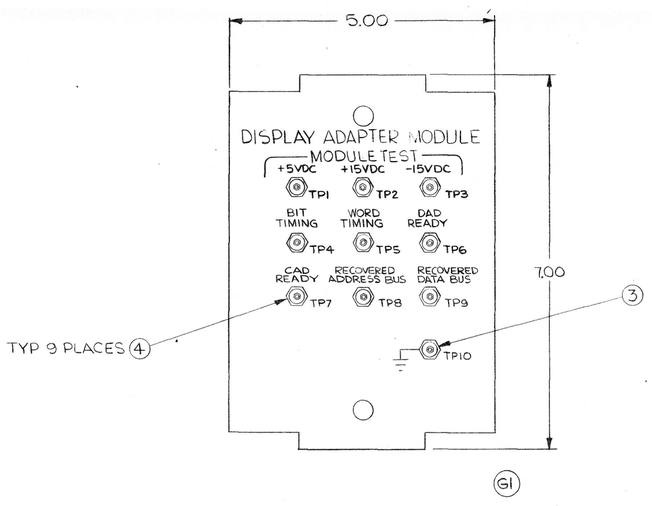
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

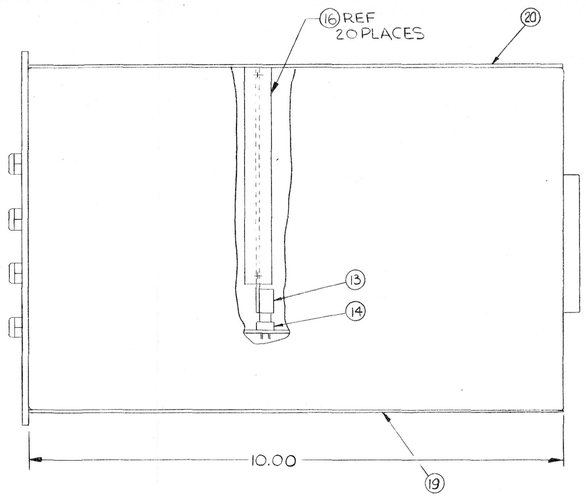


PRELIMINARY

NOTES
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222803 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

VENDOR NOTES:
A - AMP INCORPORATED
HARRISBURG, PA
B - THE BIRTCHER CORP
MONTEREY PARK, CALIF.
C - HUGHES AIRCRAFT CO.
ELEC PROD DIV
NEWPORT BEACH, CALIF.





THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5365	DISPLAY ADAPTER MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

SIMILAR TO IMBMS PHASE B3 E.A.D.C.U. ER47E216919. SUPPLIED AS PART OF NASA CONTRACT NO. NASW 1630 MOD 3.

X	47E220739	21	DIAG, SIGNAL FLOW	
1	47E222825G10	20	COVER, TOP	
1	47E222825P14	19	COVER, BOTTOM	
212	MP16V20C300	18	CONTACT, ELEC	C
1	MRS02I2500 B.N 300	17	CONNECTOR	C
20	178-7-1	16	RETAINER PCB	B
10	47E222803P15	15	SHIELD	
9	202932-2	14	CONNECTOR	A
9	202933-2	13	CONNECTOR	A
1	47E222803P12	12	INTERNAL COMMAND GEN CKT	
2	47E222803P11	11	I/C BUFFERS CKT	
1	47E222803P10	10	ANALOG OUTPUT CKT	
1	47E222803P9	9	TIMING DATA RECOVERY & D/A CKT	
1	47E222803P8	8	CDC INTERFACE CKT	
2	47E222803P7	7	CONTENT ADDRESSABLE MEMORY CKT	
1	47E222803P6	6	OUTPUT GATE & VDP CONTROL CKT	
1	47E222803P5	5	POWER SUPPLY	
9	MS16108-8A	4	TEST JACK (YELLOW)	
1	MS16108-3A	3	TEST JACK (BLACK)	
1	47E222825G2	2	MODULE	
X	47E222803	1	ASSEMBLY	

G4 G3 G2 G1 REQUIREMENTS PER ASS'Y.	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE

LIST OF MATERIAL

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47E222803G	47E220699G1
47E222803G1	47E220697G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	14	10	70
CHECKED	22	10	70
ISSUED	12	11	70
ENGR.	27	11	70
MFG	30	10	70
QUAL			
PROJ. ENGR.	30	10	70
PROG. MGR.	3	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

MODULE, ASSEMBLY OF DISPLAY ADAPTER CAD SUB-SYSTEM IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E222803

SCALE 1:1 SHEET 1 OF 1

USED E ER47E222803 REV

USED E ER47E222803 REV

DIST 170

PS-6000-F (5-68) PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

INPUT #1 FROM CAMERA CONTROL

INPUT #2 FROM CAMERA CONTROL

SUMMING AMPLIFIER

DISTRIBUTION AMPLIFIERS

TO VIDEO RECORDER

TO SCAN CONVERTER

EXTERNAL FADE CONTROL

REF. VOLTAGE

FADE CONTROL VOLTAGES

INTERNAL VOLTAGES

DC/DC CONVERTER

27.5 VDC

6 MOMENTARY CLOSURES FROM OPERATOR CONTROL

6 LOGIC SELECTION SIGNALS FROM DISPLAY ADAPTER MODULE

RELAY MATRIX CONTROL

K1 SET
RETURN
K1 RESET
K6 SET
RETURN
K6 RESET
S
R
K1
K6

COMBINED DISPLAY INPUT

#1 RED
#2 RED
#1 BLUE
#2 BLUE
#1 GREEN
#2 GREEN

K1 A
K2 A
K3 A
K4 A
K5 A
K6 A
K1 B
K2 B
K3 B
K4 B
K5 B
K6 B
K1 C
K2 C
K3 C
K4 C
K5 C
K6 C

INTERNAL GAIN CONTROLS

RED ADJUST AMP.

BLUE ADJUST AMP.

GREEN ADJUST AMP.

FROM SCAN CONVERTER

RED SUMMING AMPLIFIER

BLUE SUMMING AMPLIFIER

GREEN SUMMING AMPLIFIER

RED DRIVE

BLUE DRIVE

GREEN DRIVE

TO COLOR MONITOR

EXTERNAL FADE CONTROL

REF. VOLTAGE

FADE CONTROL VOLTAGES

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN J. KRAIKER	19	10	70
CHECKED	19	10	70
RELEASED	17	11	70
ENGRG	17	11	70
	19	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

DIAGRAM, SIGNAL FLOW
VIDEO MIXER
CAD S/S
IMBLMS B4

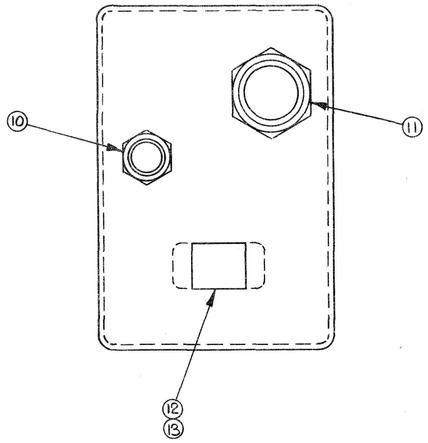
SIZE	CODE IDENT NO.	
E	23991	ER47E222804

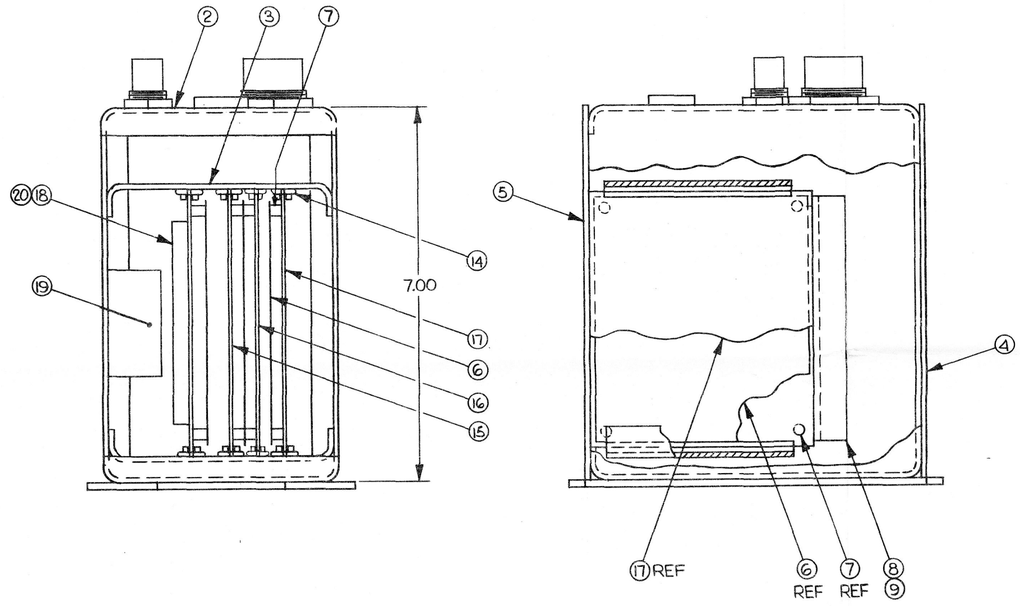
SCALE — SHEET 1 OF 1

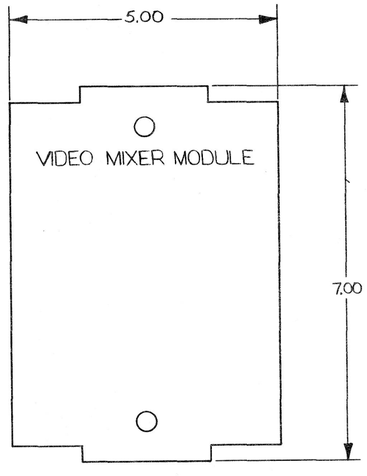
47E222804 DWG NO. | JN222805G1 NEXT ASSY

REV F ER47E222804 REV E ER47E222804

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE	APPROVED







THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5377	VIDEO MIXER MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

NOTES
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222805 (GROUP OR PART NUMBER AS APPLICABLE) PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

G1

VENDOR NOTES:
- A. AMP CORP HARRISBURG, PA
- B. BENDIX ELECTRICAL COMPONENT DIV SIDNEY, N Y
- C. HUGHES AIRCRAFT CORP NEWPORT BEACH, CALIF
- D. BIRTCHER CORP MONTEREY PARK, CALIF

FUNCTIONALLY CLOSE TO PTS-1 VIDEO SWITCHING SYSTEM COMPONENTS RCA

X	47E222804	21	SIGNAL FLOW DIAGRAM	
4	202933-1	20	CONNECTOR, 71 PIN	A
1	47E222805P19	19	CONVERTER, DC/DC	
1	P18	18	CAMERA SELECTION MIXER AMPLIFIER	
1	P17	17	COLOR/SCAN MIXER AMPLIFIER	
1	P16	16	COLOR/SCAN CONTROL BOARD	
1	47E222805P15	15	CAMERA SELECTION CONTROL BOARD	
8	178-7-1	14	RETAINER, PCB	D
1	MRS00205008N300	13	CONNECTOR, 20 PIN (COAX)	C
20	CAS178M000	12	PIN ASSEMBLY, CONNECTOR	C
1	LJT07RE17-35PA	11	CONNECTOR, 55 PIN	B
1	LJT07RE-9-6P	10	CONNECTOR, 6 PIN	B
4	202932-1	9	CONNECTOR, 71 PIN	A
1	47E222805P8	8	BASE, CONNECTOR MOUNTING	
16	47E222805P7	7	SPACER	
4	47E222805P6	6	SHIELD	
1	47E222825G9	5	COVER, TOP	
1	47E222825P13	4	COVER, BOTTOM	
2	47E222805P3	3	BULKHEAD	
1	47E222825G1	2	MODULE	
X	47E222805G1	1	ASSEMBLY	

G4 G3 G2 G1 REQUIREMENTS PER ASSY	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE

LIST OF MATERIAL

PART NO.	NEXT ASSY
47E222805G1	47E220697G1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	15	10	70
CHECKED	20	10	70
APPROVED	14	11	70
ENGRG	2	12	70
	1	4	71
	23	10	74

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

MODULE ASSEMBLY OF VIDEO MIXER
CAD 5/5 IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E222805

SCALE 1/1 SHEET 1 OF 1

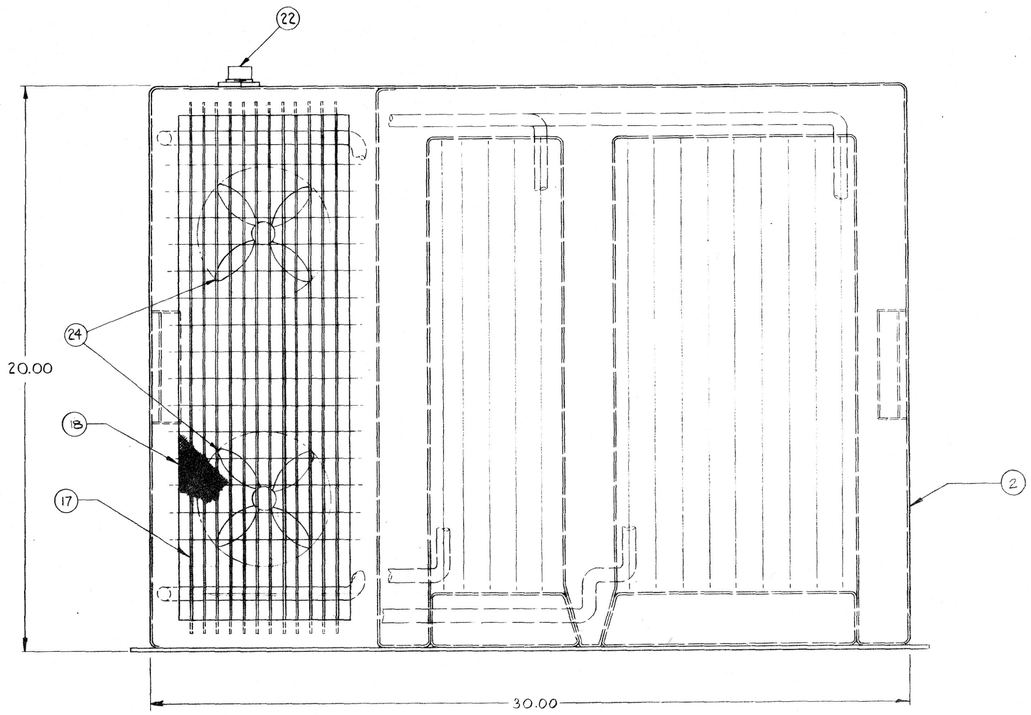
USED ON: E ER47E222805 REV

USED ON: E ER47E222805 REV

SIZE E ER47E222805 REV

PRINTED IN U.S.A.

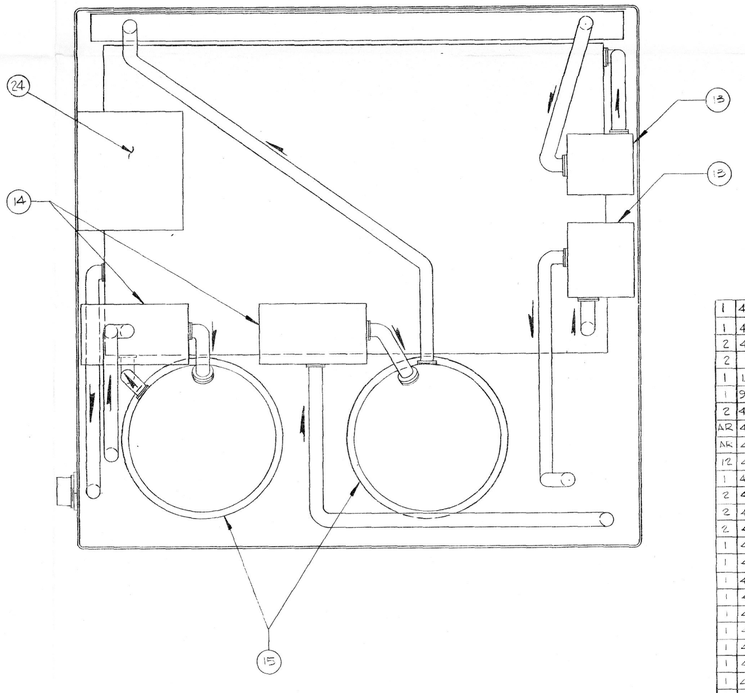
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 11BAI334.
2. MARK GE 47E222[illegible] G NO. OR P NO. AS APPLICABLE PER 11BAI334, PARA 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE
4. ——— INDICATES DIRECTION OF COOLANT FLOW

VENDOR NOTES
A. MASTER SPECIALTIES CO.
COSTA MESA, CALIF.
B. BENDIX ELEC COMP DIV
SIDNEY, N.Y.
C. EASTERN INDUSTRIES
HAMDEN CONN.
SIMILAR TO AIRBORNE REFRIG. SYS. RS-3018
D. GENERAL ELEC. CO.
SPACE DIVISION S.S.O.
PHILA. PA.
E. ROTRON INC.
WOODSTOCK, N.Y.
SIMILAR TO PROPIMAX #2
MODEL NO. 606NS (USE WITH BATAC DC INVERTER NO. E2902)
F. ROTRON INC.
WOODSTOCK, N.Y.
SIMILAR TO PROPIMAX #2
MODEL NO. 4642S (USE WITH BATAC DC INVERTER NO. E2902)

VIEW A
SIDE OF CHASSIS REMOVED FOR CLARITY



THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

1	47E222806P26	26	FREEZER CHAMBER(-70°C) 12H X 5W X 14 DEEP	
1	47E222806P25	25	CONTROL ELECTRONICS	
2	47E222806P24	24	CIRCULATING FAN	F
2	9DE501	23	BARRIER	A
1	LJT07RE-9-6P	22	CONNECTOR	B
1	9DEN1C4F3J1WLIN1	21	SWITCH, ILLUM. PUSH-BUTTON	A
2	47E222806P20	20	TEMPERATURE INDICATOR	
AR	47E222806P19	19	POLYURETHANE FOAM #4/FT³ DENSITY	
AR	47E222806P18	18	MESH	
12	47E222806P17	17	COOLING FIN	
1	47E222806P16	16	FREON CONDENSER LOOP	C
2	47E222806P15	15	FREON COMPRESSORS	C
2	47E222806P14	14	LIQUID/GAS BARRIER	D
2	47E222806P13	13	EXPANSION VALVE	C
1	47E222806P12	12	COOLING CONDENSER, CASCADE	C
1	47E222806P11	11	COOLING EVAPORATOR, CASCADE	C
1	47E222806P10	10	CIRCULATING FAN	E
1	47E222806P9	9	CIRCULATING FAN	E
1	47E222806P8	8	SHELF	
1	47E222806P7	7	SHELF	
1	47E222806P6	6	DESICCANT TRAY	
1	47E222806P5	5	DESICCANT TRAY	
1	47E222806P4	4	FREON COOLANT LOOP	C
1	47E222806P3	3	FREON COOLANT LOOP	C
1	47E222806P2	2	FREEZER CHAMBER(-20°C) 14H X 9W X 16 DEEP	
X	47E222806G1	1	ASSEMBLY	
G4 G3 G2 G1 REQUIREMENTS PER ASSY	IDENTIFICATION NO.	ITEM NO	DESCRIPTION	SEE NOTE

LIST OF MATERIAL

REDUCED SIZE PRINT

SCALE: 0 2 INCHES

47E222806G1	47E220699G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF ✓

SIGNATURES	DAY	MO.	YR
DRAWN [illegible]	27	10	70
CHECKED [illegible]	5	11	70
ENGR RELEASE [illegible]	12	11	70
ENGR [illegible]	6	11	70
MFG [illegible]	6	11	70
[illegible]	6	11	70
[illegible]	5	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA. PA

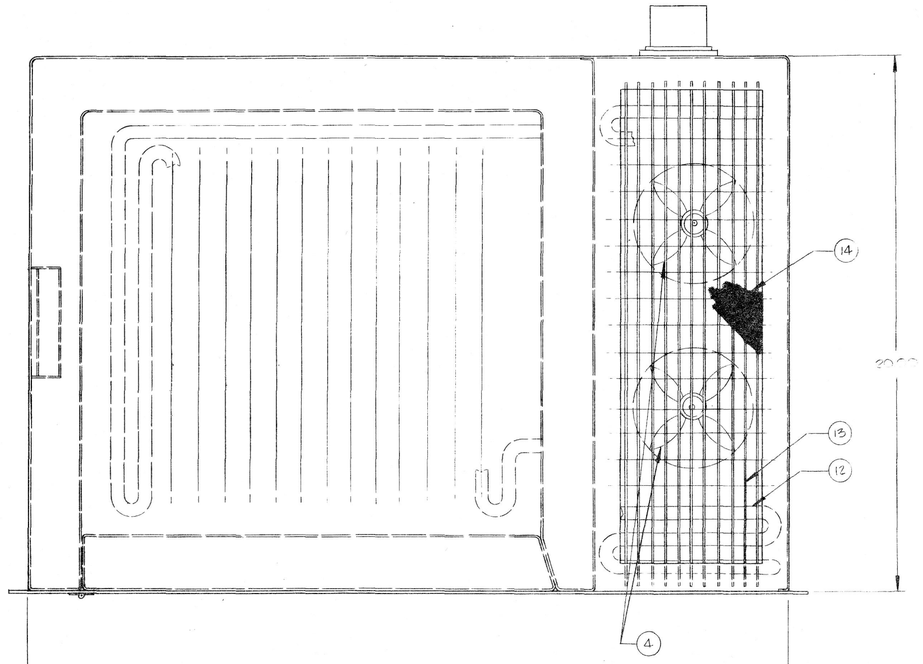
MODULE ASSEMBLY OF COMBINATION FREEZER SE/SS
IMBLMS 54

SIZE	CODE IDENT NO.	
E	23991	ER47E222806
SCALE NONE		SHEET 1 OF 1

ER47E222806 REV
ER47E222806 SIZE E
DIST 150

PN-MOD-P 3LMT
PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 11SAIG34.
2. MATL GE47E222307G OR PART NO AS APPLICABLE PER 11SA1526, CLASS 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. ◄ DENOTES DIRECTION OF COOLANT FLOW

VENDOR NOTES
A. MASTER SPECIALTIES CO.
COSTA MESA, CALIF.
B. BENDIX ELEC PROD DIV.
SIDNEY, N.Y.
C. EASTERN INDUSTRIES
HAMDEN CONN
SIMILAR TO AIRBORNE REFRIG SYS. RS 301B
D. GENERAL ELEC CO
SPACE DIVISION - S.S.O.
PHILA. PA
E. ROTRON INC
WOODSTOCK, N.Y.
SIMILAR TO PRODIMAX II
MODEL NO. 606NS (USE WITH BATAC DC INVERTER NO. E2902)
F. ROTRON INC.
WOODSTOCK, N.Y.
SIMILAR TO PRODIMAX II
MODEL NO. 464ES (USE WITH BATAC DC INVERTER NO. E2902)

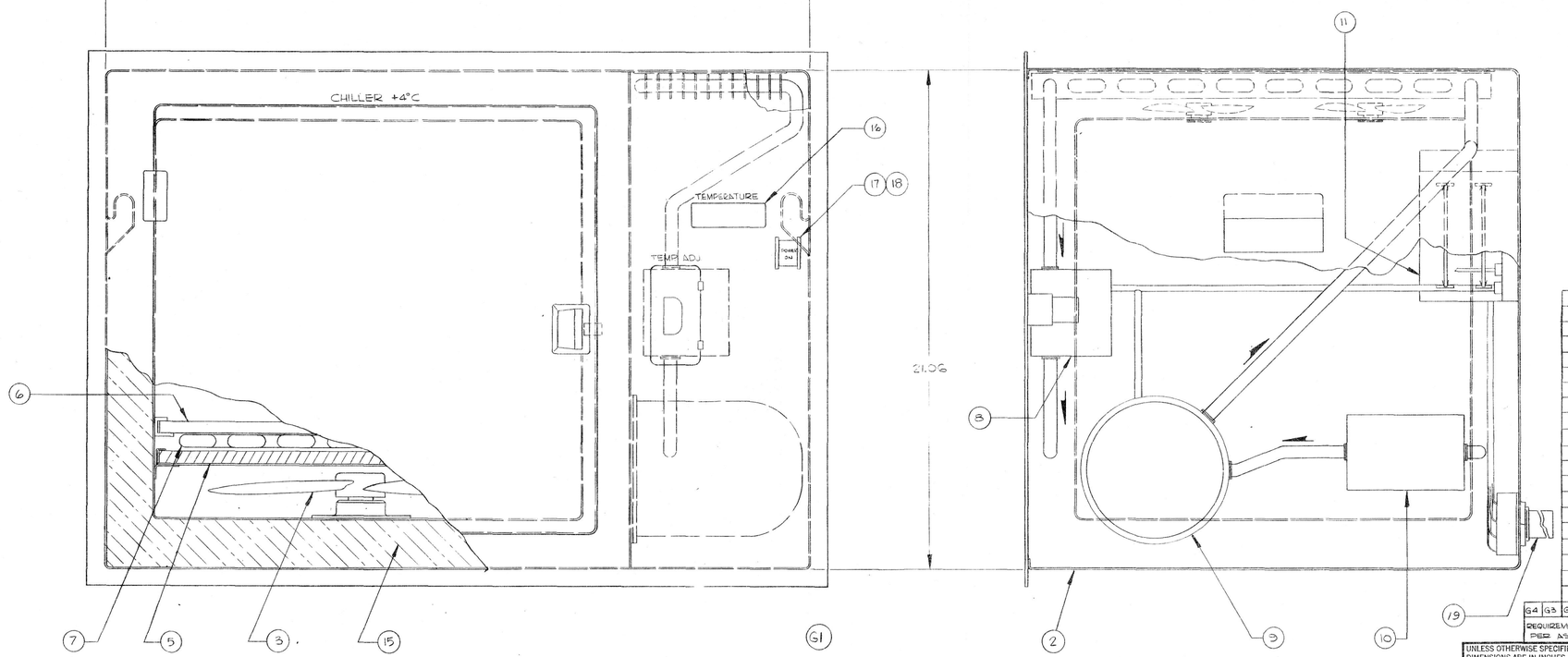
THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES



G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
				REQUIREMENTS SEE ASSY			
				1	LUTOTCE-9-6P	CONNECTOR	B
				2	30E7.01	BARRIER	A
				1	30EA1CAF3JWLIN1	SWITCH, ILLUM. PUSH-BUTTON	A
				1	47E222807P16	TEMPERATURE INDICATOR	
				AR	47E222807P15	POLYURETHANE FOAM #4/ET3 DENSITY	
				AR	47E222807P14	MESH	
				12	47E222807P13	COOLING FIN	C
				1	47E222807P12	FREON CONDENSER LOOP	C
				1	47E222807P11	CONTROL, ELECTRONICS	
				1	47E222807P10	LIQUID/GAS BARRIER	D
				1	47E222807P9	FREON COMPRESSOR	C
				1	47E222807P8	EXPANSION VALVE	C
				1	47E222807P7	FREON COOLANT LOOP	C
				1	47E222807P6	SHELF	
				1	47E222807P5	DESICCANT TRAY	
				2	47E222807P4	CIRCULATING FAN	F
				1	47E222807P3	CIRCULATING FAN	E
				1	47E222807P2	CHILLER CHAMBER, (14H X 18W X 16)	
				X	47E222807G1	ASSEMBLY	

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	SIGNATURES	DAY	MO	YR
ALL SURF ✓	DRAWN E. Kemper	17	10	70
	CHECKED A. Lucy	5	11	70
	ENGINEERING APPROVED R&C	12	11	70
	ENGR Robert Lee	6	11	70
	MFG J.A. Gentz	6	11	70
	MARKETING Ellis Gubin	6	11	70
	PROJECT MGR	6	11	70
	QUALITY Robert Lee	6	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA. PA.

MODULE ASSEMBLY OF
CHILLER
5E/5S
IMBLMS 54

SIZE	CODE IDENT NO.	ER47E222807
E	23991	

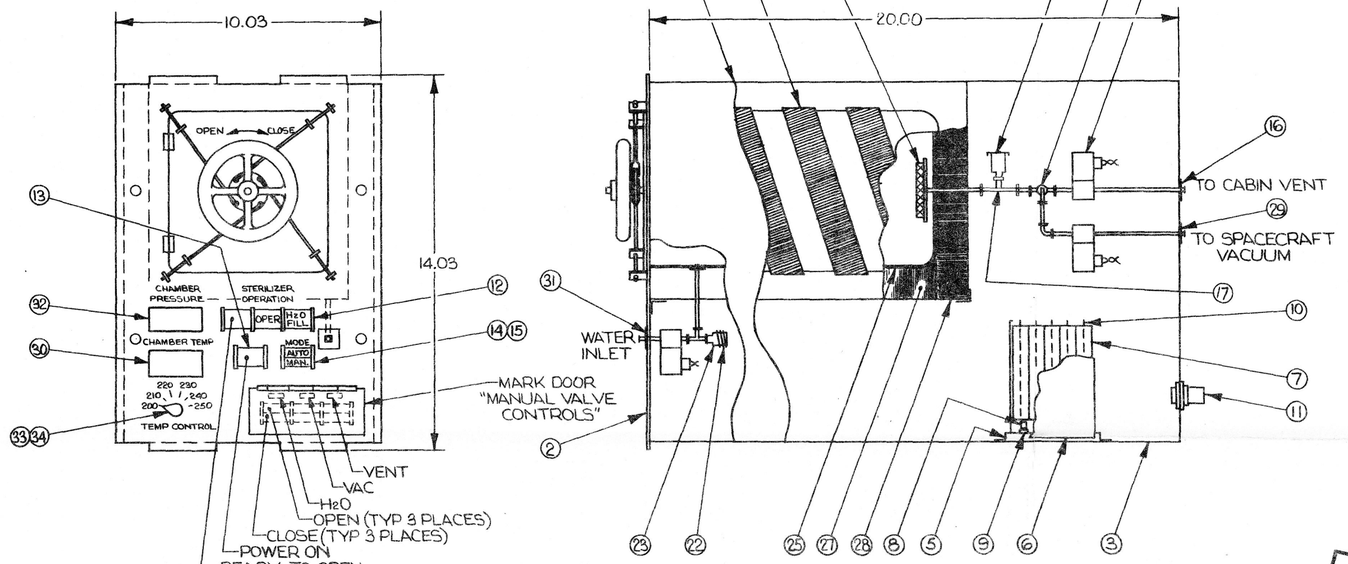
SCALE 1:2 SHEET 1 OF 1

47E222807G1	47E220699G1
PART NO	NEXT ASSY

FORM P 5-80 PRINTED IN U.S.A.

DIST NO. E ER47E222307 REV

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



NOTES
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK "GE47E222808(GROUP OR PART NUMBER AS APPLICABLE) PER 118A1526 CLASS 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

G1

VENDOR NOTES:

A. THE BIRTCHER CORP., MONTEREY, CALIF.
B. AMP CORP., HARRISBURG, PA.
C. BENDIX ELECTRICAL COMPONENT DIV., SIDNEY, NEW YORK
D. MASTER SPECIALTIES CO., COSTA MESA, CALIF.
E. SKINNER ELECTRIC VALVES, NEW BRITAIN, CONN.
F. OAK MFG. CO., CRYSTAL LAKE, ILL.
G. WATLOW ELECTRIC CO., INGLEWOOD, CALIF. (SIMILAR TO MODEL T-5 SILICON RUBBER HEATERS)
H. PALL CORP., AIRCRAFT POROUS MEDIA INC., GLEN LOVE, NEW YORK, (SUPRAMESH)
I. CIRCLE SEAL PRODUCTS CO., PASADENA, CALIF.
J. JACK D. HIENTZ CO., CLEVELAND, OHIO
K. MARSH INSTRUMENT CO., SKOKIE, ILL. (SIMILAR TO MARSH MINIGAGE LINE 0-80PSI RANGE)
L. ATLANTIC PYROMETER CO., HAWTHORNE, N.J. (SIMILAR TO PANEL MOUNT MODEL 15A-T)

G4 G3 G2 G1 REQUIREMENTS PER ASSY	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
1	399223A	34	SWITCH, ROTARY	F
1	MS91528-0K1B	33	KNOB	
1	47E222808P32	32	PRESSURE GAGE	K
1	P31	31	FITTING	
1	P30	30	TEMPERATURE GAGE	L
1	P29	29	FITTING, VACUUM, QUICK DISCONNECT	J
1	P28	28	INSULATION JACKET	
AR	P27	27	INSULATION, POLYURETHANE (1.00 THK)	
1	P26	26	STRIP HEATER, STERLIZER	G
1	P25	25	PRESSURE CHAMBER, STERLIZER (7.5WX8HX12D)	
1	P24	24	FILTER, BACTERIA	H
1	P23	23	WATER RESERVOIR WITH WICK	
1	47E222808P22	22	STRIP HEATER, WATER RESERVOIR	G
3	V52DA1100	21	VALVE, TWO WAY, SOLENOID 1/8 NPT, 100PSI	E
1	D520T-2MP-50	20	VALVE, PRESSURE RELIEF	I
AR	P19	19	PIPE	
2	P18	18	ELBOW 90°	
2	P17	17	PIPE TEE	
4	47E222808P16	16	PORT	
12	90E505	15	BARRIER	D
4	90EA1C4F3J2WL2N1	14	SWITCH, ILLUMINATED PUSHBUTTON	D
1	90EA1C4F3J1WL1N1	13	SWITCH, ILLUMINATED PUSHBUTTON	D
1	90EF3J1WL1N1	12	INDICATOR	D
1	LJT07RE-9-6P	11	CONNECTOR	C
5	47E222808P10	10	SEQUENCE CONTROL CIRCUITS	
5	202932-1	9	CONNECTOR	B
5	202933-1	8	CONNECTOR	B
10	17B-7-1	7	RETAINER, PCB	A
1	47E222808P6	6	ENCLOSURE	
1	47E222808P5	5	BASE, CONNECTOR MOUNTING	
1	47E222830G6	4	COVER, TOP	
1	47E222830G8	3	COVER, BOTTOM	
1	47E222830G2	2	MODULE	
X	47E222808G1	1	ASSEMBLY	

LIST OF MATERIAL

47E222808G1	47E220699G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	26	10	70
CHECKED	4	11	70
ENGR APPROVED	14	11	70
MFG APPROVED	4	11	70
PROJ MGR	4	11	70
QUALITY ASSURANCE	4	11	70
CONTRACTS	5	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

MODULE, ASSEMBLY OF STERILIZER
SE S/S IMBLMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E222808

SCALE — | SHEET 1 OF 1

DIST NO

SIZE E ER47E222808 REV

SIZE E ER47E222808 REV

PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

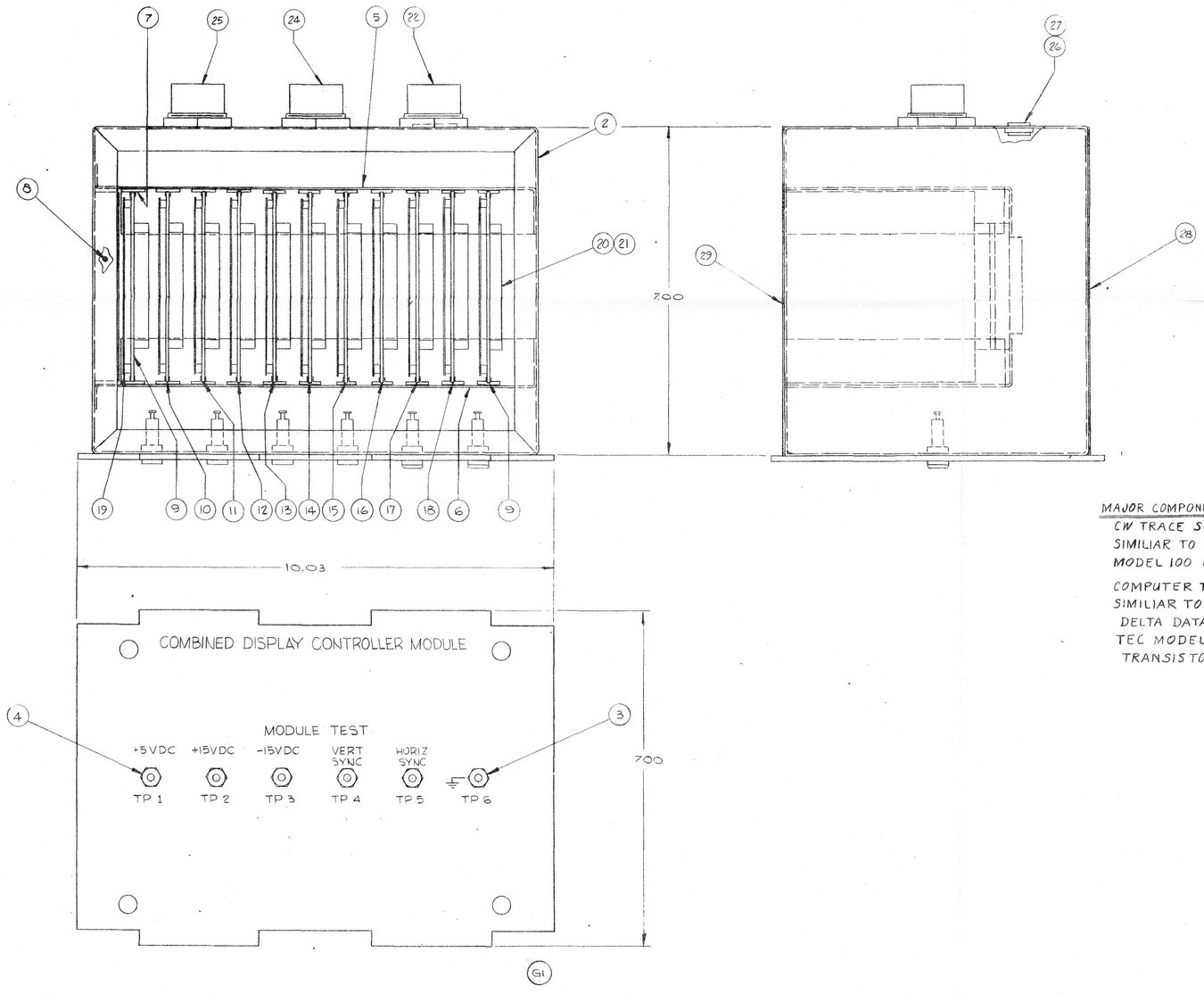
NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER USAS Y14.5.
2. MARK GE 47E222809 G NO. OR P NO. AS APPLICABLE PER USAS Y32.26 CLASS 2.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

VENDOR NOTES:
A. THE BIETCHER CORP
MONTEREY, CALIF
B. AMP INC.
HARRISBURG, PA
C. BENDIX CORP
SIDNEY N.Y.
D. HUGHES AIRCRAFT CO.
NEWPORT BEACH, CALIF

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5367	COMBINED DISPLAY CONTROLLER SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY



MAJOR COMPONENTS

CW TRACE SCAN CONVERSION
SIMILIAR TO WESTINGHOUSE
MODEL 100 GRAPHICAL DISPLAY

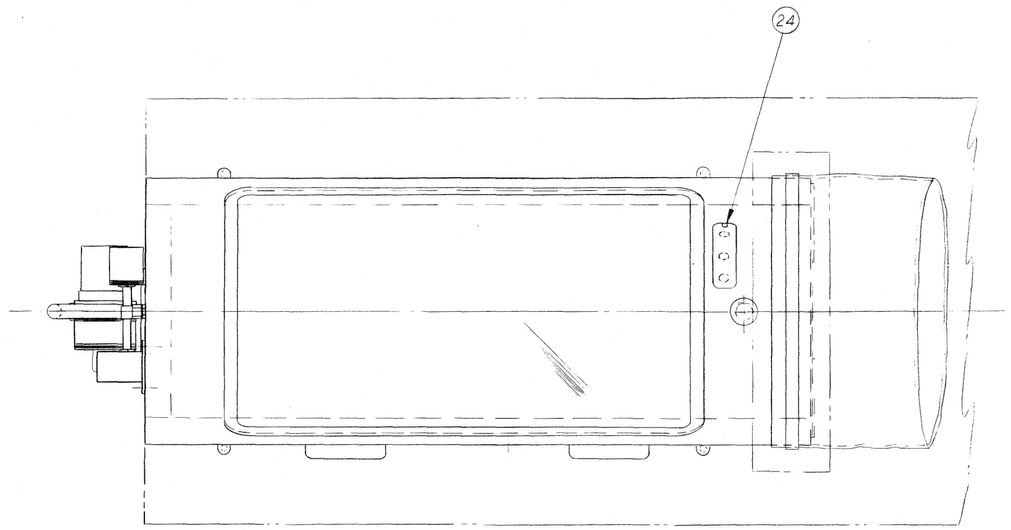
COMPUTER TERMINAL FUNCTION
SIMILIAR TO DELTA 1
DELTA DATA SYSTEMS CORP.
TEC MODEL 400
TRANSISTOR ELECTRONICS CORP.

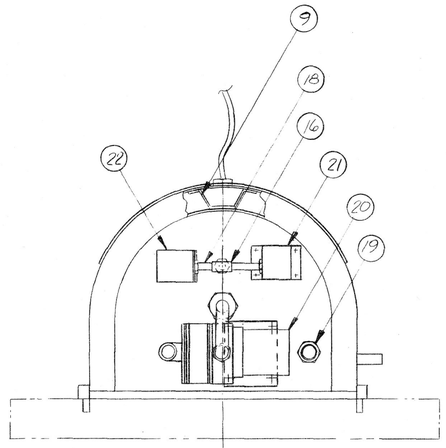
REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

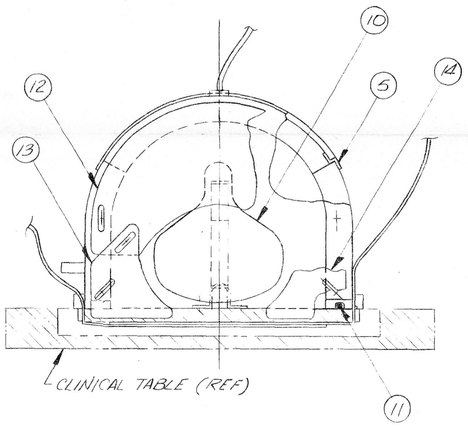
| | | | |

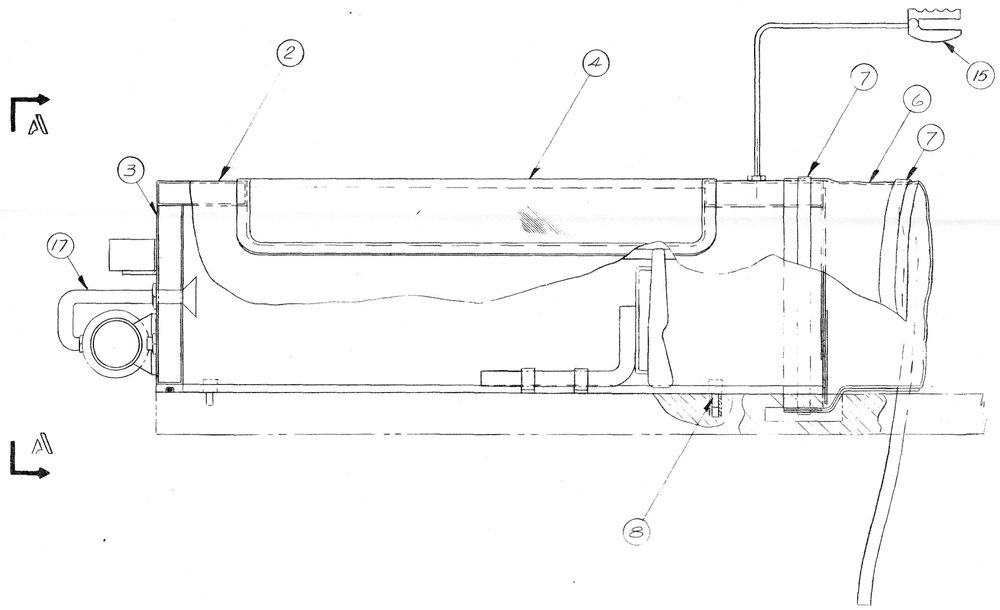
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





VIEW A = A





THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

VENDOR NOTES

A LEAR SIEGLER INC - ROMEC DIV
ELYRIA, OHIO

B ROSEMOUNT ENGINEERING CO.
NEWTOWN SQUARE, PA

C COMPUTER INSTRUMENTS CORP.

D BENDIX ELECTRICAL COMP DIV.
SIDNEY, NY

E. GEORGE RISK INDUSTRIES
COLUMBUS, NEBRASKA
(UTILIZE SWITCH SIMILAR
TO SERIES T)

PRELIMINARY

G4	G3	G2	G1	REQUIREMENTS PER ASSY.	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
			1		47E222810P24	24	VALVE, BLEED ADJUST	
			X		47D220763	23	DIAG SIGNAL FLOW	
			1		6100	22	PRESSURE SWITCH	C
			1		8311A4	21	SENSOR	B
			1		RR46010	20	COMPRESSOR	A
			1		WJ10TRE 135P	19	CONNECTOR	D
			AR		47E222810-16	18	TUBING	
			AR		P17	17	TUBING	
			1		P16	16	UNION	
			1		P15	15	SWITCH ASSEMBLY, SUBJECT OVER RIDE	E
			1		P14	14	SEAL, LATERAL SIDE	
			1		P13	13	SEAL, LATERAL SIDE	
			1		P12	12	SEAL, WAIST	
			1		P11	11	O-RING	
			1		P10	10	SEAT	
			AR		P9	9	SUPPORT	
			4		P8	8	GUIDE	
			2		P7	7	BELT	
			2		P6	6	SEAL, BODY	
			1		P5	5	FRAME	
			1		P4	4	WINDOW	
			1		P3	3	BULKHEAD	
			1		P2	2	COVER	
		X			47E222810 G1	1	ASSEMBLY	

LIST OF MATERIAL

REDUCED SIZE PRINT

SCALE: 0 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF. ✓	SIGNATURES	DAY	MO	YR
		DRAWN			
		CHECKED	2	4	70
		ENGR APPROVED	12	11	70
		ENGR	4	11	70
		MFG	4	11	70
		QUALITY	4	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA

LOWER BODY NEGATIVE PRESSURE DEVICE
SEISS
MBLMS

SIZE	CODE IDENT NO.	
E	24991	ER47E222810

SCALE 1/4 SHEET 1 OF FIVE

47E222810 G1 | 47E220496 G1
DWG NUMBER | NEXT ASSY.

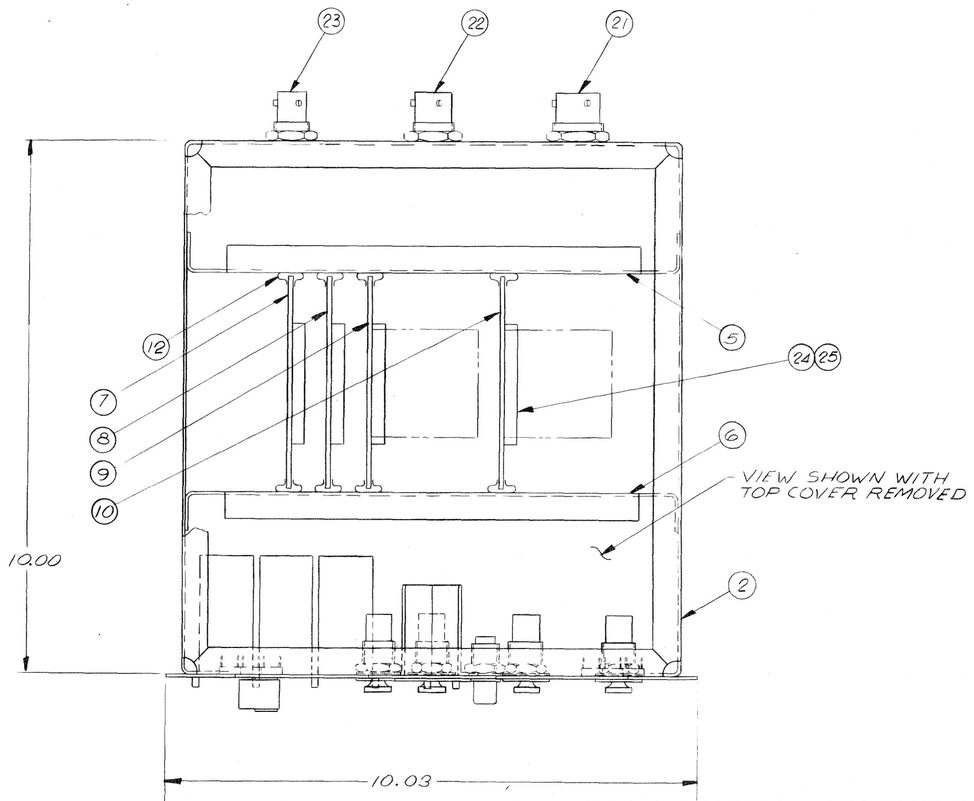
REV E FRAME 222810

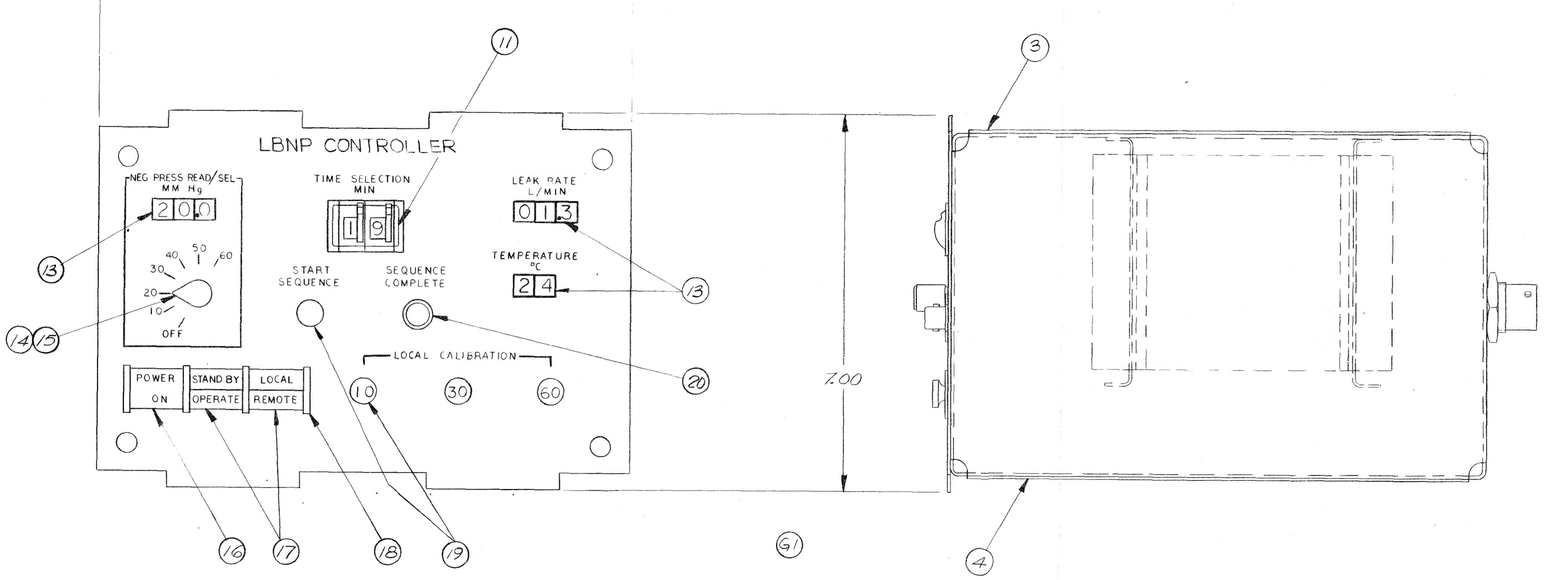
REV E FRAME 222810

REV E FRAME 222810

FORM 6508-7 (1-69) PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





PRELIMINARY

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

NOTES:

1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664
2. MARK GE47E222811 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526 CL 21
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE

VENDOR NOTES CON'T:

F. OAK MFG CO.
CRYSTAL LAKE, ILL.

G. BENDIX ELEC COMP DIV
SIDNEY, N.Y.

H. AMP INC
HARRISBURG, PA

VENDOR NOTES:

A. THE BIRTCHER CORP.
MONTEREY PARK, CALIF.

B. MONSANTO CO. ELEC SPEC PROD
CUPERTINO, CALIF.

C. MASTER SPECIALTIES CORP
COSTA MESA, CALIF.

D. CONTROLS CO. OF AMERICA
FOLCROFT, PA.

E. CHERRY ELEC PROD. CORP.
HIGHLAND PARK, ILL

			X	47E222811G1	27	LBNP DEVICE	
			X	47D220763	26	DIAGRAM, SIGNAL FLOW	
			4	202932-2	25	CONNECTOR	H
			4	202933-2	24	CONNECTOR	H
			1	MJT07RE9-6P	23	CONNECTOR	G
			1	MJT07RE-11-3P	22	CONNECTOR	G
			1	MJT07RE-13-22P	21	CONNECTOR	G
			1	MS25256-4	20	LIGHT	
			4	W9601-B	19	SWITCH, PUSH BUTTON	D
			4	90E505	18	BARRIER	C
			2	901EAK4A3J2W2N1	17	SWITCH, ILLUMINATED PUSH BUTTON	C
			1	901EAK4AF3J1WLN1	16	SWITCH, ILLUMINATED PUSH BUTTON	C
			1	399217A	15	SWITCH, ROTARY	F
			1	MS91528B0K1B	14	KNOB	
			8	MAN 1	13	DISPLAY ALPHANUMERIC	B
			8	17B-7-1	12	RETAINER, PCB	A
			1	T20-01M-2	11	THUMBWHEEL SWITCH	E
			1	47E222811P10	10	POWER AMPLIFIER	
			1	P9	9	POWER AMPLIFIER	
			1	P8	8	SUMMING & COMPENSATING AMP.	
			1	P7	7	OR GATE	
			1	P6	6	STRUT	
			1	47E222811P5	5	STRUT	
			1	47E222826G1A	4	BOTTOM COVER	
			1	47E222826G1D	3	TOP COVER	
			1	47E222826G2	2	MODULE	
			X	47E222811G1	1	ASSEMBLY	
G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASS'Y.						LIST OF MATERIAL	

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	22	10	70
CHECKED	28	10	70
APPROVED	14	11	70
ENGRG.	21	11	70
	28	10	70
	20	10	70
	20	10	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT. LOC PHILA., PA.

MODULE, ASSEMBLY OF LOWER BODY NEGATIVE PRESSURE CONTR. SE S/S IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E222811

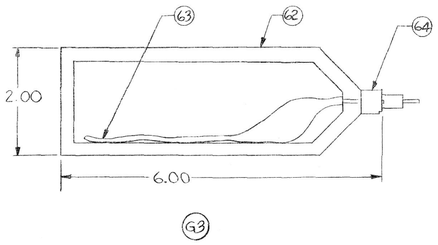
SCALE 1/1 SHEET 1 OF 1

47E222811G1 PART NO | 47E220698G1 NEXT ASSY

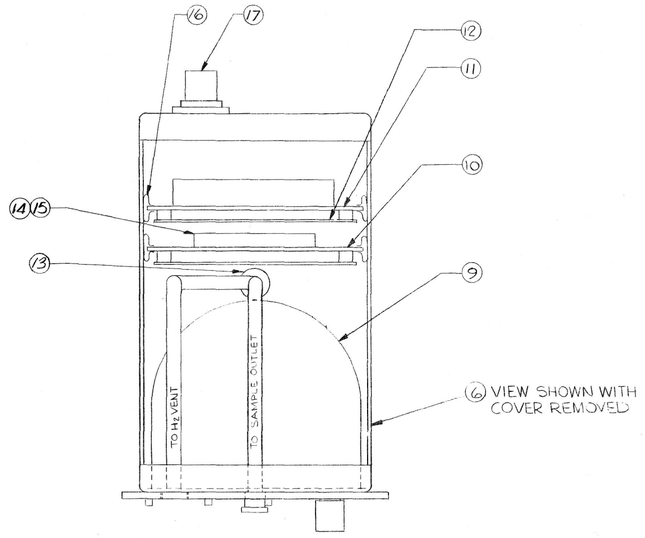
ER47E222811 REV E

ER47E222811 REV E

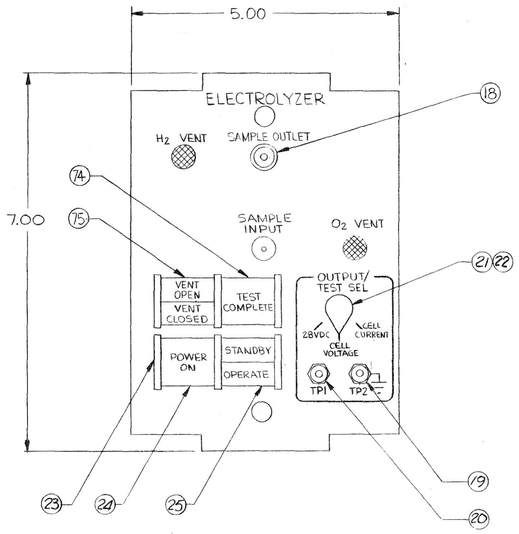
PRINTED IN U.S.A.



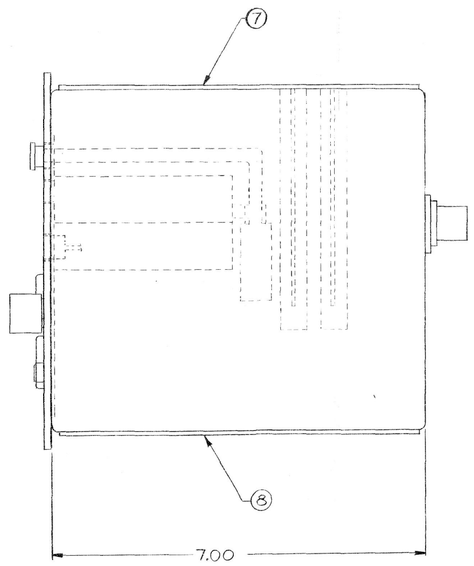
(G3)



⑥ VIEW SHOWN WITH COVER REMOVED



(G1)



NOTES:

1. INTERPRETATION OF DWG. TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222812 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526 CL21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5252	LABORATORY ANALYSIS SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5390	LABORATORY ANALYSIS SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5347	SAMPLE ACQUISITION & PREPARATION MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

VENDOR NOTES:

A. AMP INC., HARRISBURG, PA.
B. THE BIRTCHER CORP., MONTEREY, CALIF.
C. THE BENDIX CORP., ELEC PROD DIV., SIDNEY, N.Y.
D. OAK MFG CO., CRYSTAL LAKE, ILL.
E. MASTER SPECIALTIES CO., COSTA MESA, CALIF.
F. ALCO ELECTRONIC PRODUCTS, INC., LAWRENCE, MASS.
G. CHERRY ELEC. PROP. CORP., HIGHLAND PARK, ILL.
H. J. D. HEINTZ, CLEVELAND, OHIO
I. DUPONT INST. EQUIP. DIV., WILMINGTON, DEL. (SIMILAR TO ANALYTICAL TEST PACK)
J. GENERAL ELECTRIC CO., SPACE DIVISION, PHILA., PA. (SIMILAR TO DWG. 47D220177)
K. ACOPIAN CORP., EASTON, PA. (SIMILAR TO MODEL # 15CT10D)
L. AIRBORNE ACCESSORIES CORP. (SIMILAR TO MODEL R5210M7-1)
P. HARVARD APPARATUS CO., INC., MILLIS, MASS. (SIMILAR TO MODEL NO. 1302)
Q. SPERRY MARINE SYSTEMS, CHARLOTTESVILLE, VA. (SIMILAR TO LEM FAN MOTOR)
R. PIC DESIGN CORP., EAST ROCHAWAY L.I., N.Y., (SIMILAR TO EM3-21)
S. PIC DESIGN CORP., EAST ROCKAWAY L.I., N.Y., (SIMILAR TO EL 20)
T. IMC MAGNETICS CORP., MAYWOOD CALIF., (SIMILAR TO #015-802)
U. AUTOMATIC SWITCH CO., FLORHAM PARK, N.J. (SIMILAR TO SERIES 8314-17 3 WAY VALVES)
V. GENERAL ELECTRIC CO, SPACE DIV, PHILA. PA. (USES CHICAGO MIN. LAMP CO. MODEL NO 1489 AND INTERNATIONAL RECT. CO. PHOTOCELL MODEL NO SPR-8-10PL)

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

G5	G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
							LIST OF MATERIAL	
REQUIREMENTS PER ASS'Y.								
–	–	–	–	1	47E222812 P83	83	MIXING OSCILLATOR	
–	–	–	–	3	P82	82	IDENT READER	V
–	–	–	–	1	P81	81	MOTOR, STEPPING	T
–	–	–	–	1	P80	80	CLIP, RETAINING	
–	–	–	–	1	P79	79	CHAIN, TIMING	S
–	–	–	–	1	P78	78	IDLER, SPRING LOADED	R
–	–	–	–	1	P77	77	SPROCKET	R
–	–	–	–	1	47E222812 P76	76	SPROCKET	R
–	–	–	–	1	90EF3J2WL2N1	75	INDICATOR	E
–	–	–	–	1	90EF3JIWLIN1	74	INDICATOR	E
X	X	–	X	X	47D222837	73	DIAG SIGNAL FLOW	
–	4	–	–	–	47E222812 P72	72	SYRINGE, 10 CC (MFS)	
–	–	–	–	–	P71	71	SYRINGE, MODULE INPUT	
–	–	–	–	–	P70	70	SYRINGE, GAM	
–	–	–	–	–	P69	69	BAG, SAMPLE	J
1	–	–	–	–	P68	68	PANEL	
–	4	–	–	–	P67	67	BASKET	
–	1	–	–	–	P66	66	MOTOR	Q
–	1	–	–	–	P65	65	CENTRIFUGE	
–	–	1	–	–	P64	64	FITTING, GAS TIGHT QUICK DISCONNECT	H
–	–	1	–	–	P63	63	BLADDER, DISPOSABLE	
–	–	1	–	–	47E222812 P62	62	CONTAINER, GAS COLLECTION	
–	–	–	6	–	720-01M-2	61	SWITCH, THUMBWHEEL	G
–	–	–	2	–	MST6-106D	60	TOGGLE SWITCH	F
–	–	–	1	–	47E222812 P59	59	FITTING, DRIPPLESS QUICK DISCONNECT	H
–	–	–	6	–	47E222812 P58	58	PUMP, LAMBDA	P
–	–	–	1	–	LJT0TRE-11-13S	57	CONNECTOR	C
–	–	–	1	–	LJT0TRE-11-13P	56	CONNECTOR	C
–	–	–	1	–	47E220717G2	55	RADIATION DETECTOR PRE AMP	
–	–	–	1	–	47E220717G3	54	RADIATION DETECTOR	
–	–	–	1	–	47E222812 P53	53	NEEDLE ASSY	
–	–	–	1	–	P52	52	DEBUBBLER, BLOOD	
–	–	–	1	–	P51	51	DEBUBBLER, URINE	
–	–	–	2	–	P50	50	SPRING, ASSY	
–	–	–	2	–	P49	49	NEEDLE ASSY	
–	–	–	2	–	P48	48	TRACK ASSY	
–	–	–	2	–	P47	47	PUMP, PRECISION	
–	–	–	2	–	P46	46	ACTUATOR, LINEAR, 3 POSITION	M
–	–	–	1	–	P45	45	REEL	
–	–	–	1	–	P44	44	RINSE	
–	–	–	6	–	P43	43	NEEDLE	
–	–	–	6	–	P42	42	ACTUATOR, LINEAR, 2 POSITION	M
–	–	–	1	–	P41	41	BRACKET	
–	–	–	1	–	P40	40	TRACK ASSY	
–	–	–	1	–	P39	39	POWER SUPPLY ELECTRONICS	L
–	–	–	1	–	P38	38	PUMP CONTROL CIRCUIT	
–	–	–	1	–	P37	37		
–	–	–	1	–	P36	36		
–	–	–	1	–	P35	35		
–	–	–	1	–	P34	34		
–	–	–	1	–	P33	33	PUMP CONTROL CIRCUIT	
–	–	–	1	–	P32	32	TRANSPORT CONTROL	
–	–	–	1	–	P31	31	COVER, HINGED	
–	–	–	2	–	P30	30	SLIDE	
–	–	–	1	–	47E222812 P29	29	DILUENT STORAGE CHAMBER	
–	–	–	1	–	47E222829 P14	28	COVER, BOTTOM	
–	–	–	1	–	47E222829 P2	27	COVER, TOP	
–	–	–	1	–	47E222829 G2	26	MODULE	
1	–	–	3	1	90EA1C4F3J2WL2N1	25	SWITCH, PUSH BUTTON ILLUM	E
1	–	–	12	1	90EA1C4F3JIWLIN1	24	SWITCH, PUSH BUTTON ILLUM	E
3	–	–	24	6	90E505	23	BARRIER	E
2	–	–	–	1	MS91528-0K18	22	KNOB	
2	–	–	–	1	399223A	21	SWITCH, ROTARY	D
–	–	–	–	1	MS16108-8A	20	JACK, TEST (YELLOW)	
–	–	–	–	1	MS16108-3A	19	JACK, TEST (BLACK)	
–	–	–	–	1	47E222812-P18	18	FITTING, GAS TIGHT, QUICK DISCONNECT	F
–	–	–	1	1	LJT07RE-9-6P	17	CONNECTOR	C
–	–	–	16	4	17B-7-1	16	RETAINER, PCB	B
–	–	–	8	1	202933-2	15	CONNECTOR	A
–	–	–	8	1	202932-2	14	CONNECTOR	A
–	–	–	–	1	47E222812 P13	13	SOLENOID T VALVE	U
–	–	–	2	–	P12	12	SHIELD	
–	–	–	–	1	P11	11	POWER SUPPLY	L
–	–	–	–	1	P10	10	CONTROL TIMER	
–	–	–	–	1	47E222812 P9	9	ELECTROLYZER CELL	K
–	–	–	–	1	47E222825 P13	8	COVER, BOTTOM	
–	–	–	–	1	47E222825 G9	7	COVER, TOP	
–	–	–	–	1	47E222825 G1	6	MODULE	
–	–	–	–	–	47E222812 G5	5	ASSEMBLY, CENTRIFUGE CONTROL PANEL	
X	–	–	–	–	G4	4	ASSEMBLY, CENTRIFUGE	
–	X	–	–	–	G3	3	ASSEMBLY, BLADDER	
–	–	X	–	–	G2	2	ASSEMBLY, SAMPLE PREPARATION	
–	–	–	X	–	47E222812 G1	1	ASSEMBLY, ELECTROLYZER	

47E222812G5	47E220699G1
47E222812G4	47E220699G1
47E222812G3	47E220699G1
47E222812G2	47E220699G1
47E222812G1	47E220699G1
PART NO	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	2	11	70
CHECKED	6	11	70
ENGR	6	11	70
	6	11	70
	6	11	70
	6	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

MODULE, ASSEMBLY OF SAMPLE ACQUISITION & PREPARATION LAB ANALYSIS SUB SYSTEM IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E222812

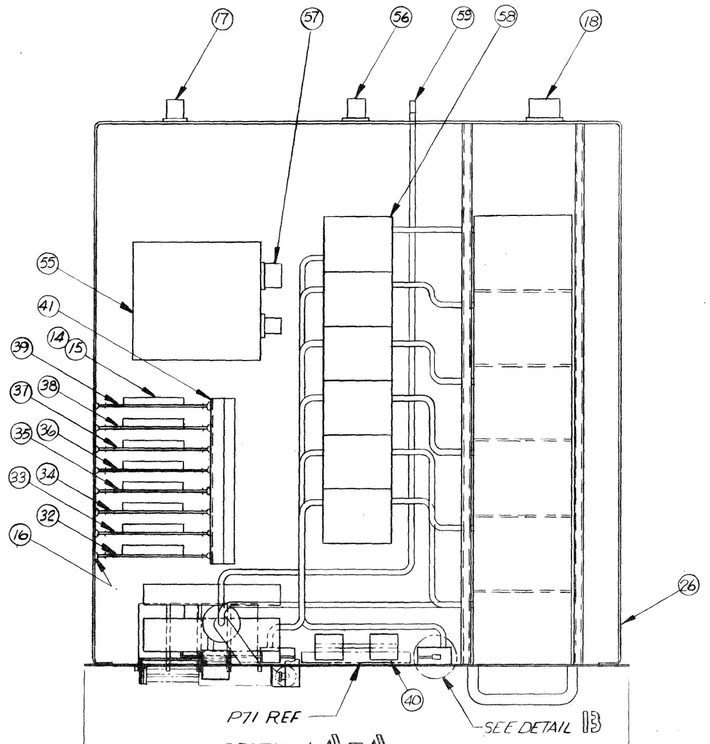
SCALE 1:1 SHEET 1 OF 3

DIST TO

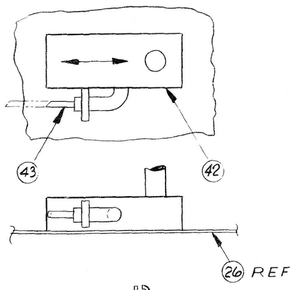
REV | LTR | ER47E222812

REV | LTR | ER47E222812

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE	APPROVED

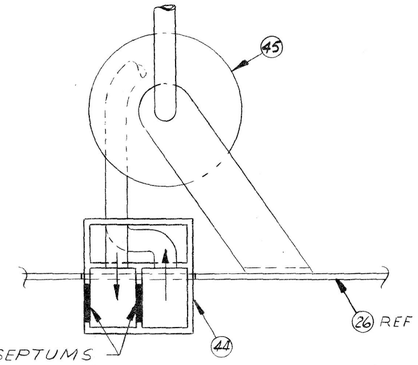


SECTION A-A



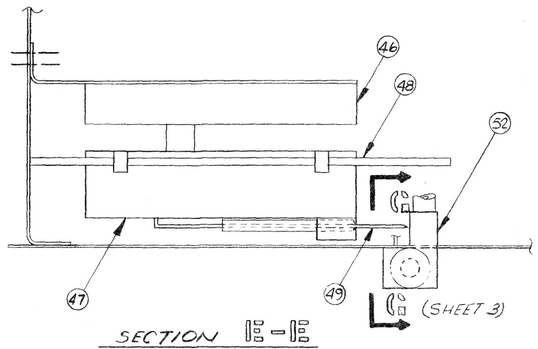
DETAIL B

SCALE 2/1
TYP 3 PLACES AS SHOWN
& 3 PLACES OPPOSITE HAND



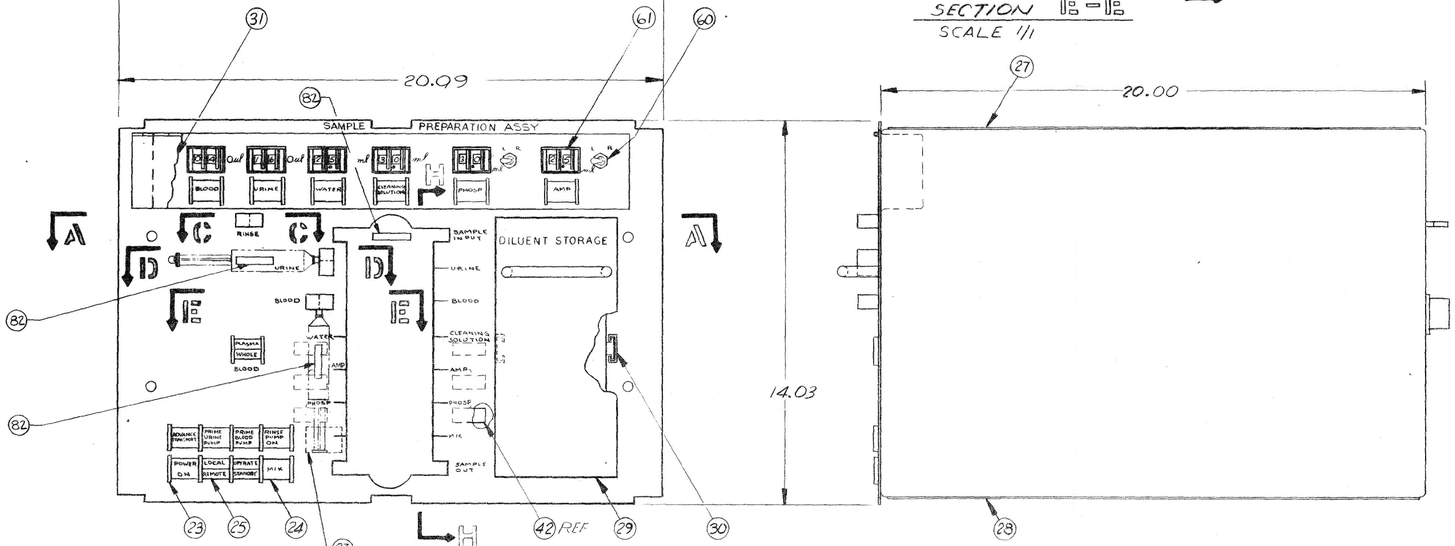
SECTION C-C

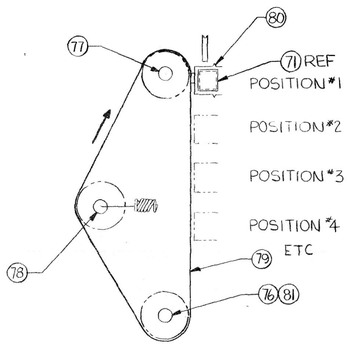
SCALE 2/1



SECTION E-E

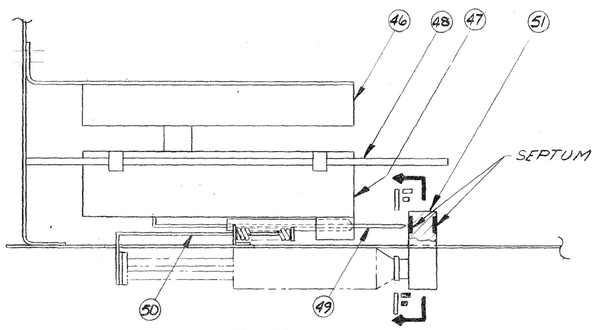
SCALE 1/1





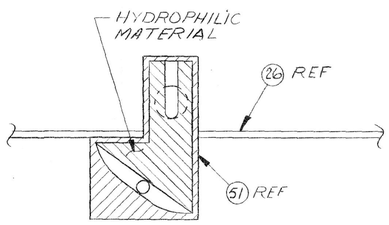
SECTION H-H

SCALE 1/1



SECTION D-D

SCALE 1/1



SECTION F-F

SCALE 2/1

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF √

SIGNATURES	DAY	MO	YR
DRWN	12	11	70
CHECKED	6	11	70
ECR/ECN	12	11	70
ENGRG	6	11	70
MANUF	6	11	70
QUALITY	6	11	70
	6	11	70
	6	11	70

GENERAL ELECTRIC

SPACE SYSTEMS LOS. PHILA., PA

MODULE ASSEMBLY OF SAMPLE ACQUISITION & PREPARATION LAB ANALYSIS SUB SYSTEM IMBLMS # 4

SIZE	CODE IDENT NO.	
E	23991	ER47E222812

SCALE 1/1 A3 SIZE SHEET 2 OF 3

REV

SIZE E ER47E222812

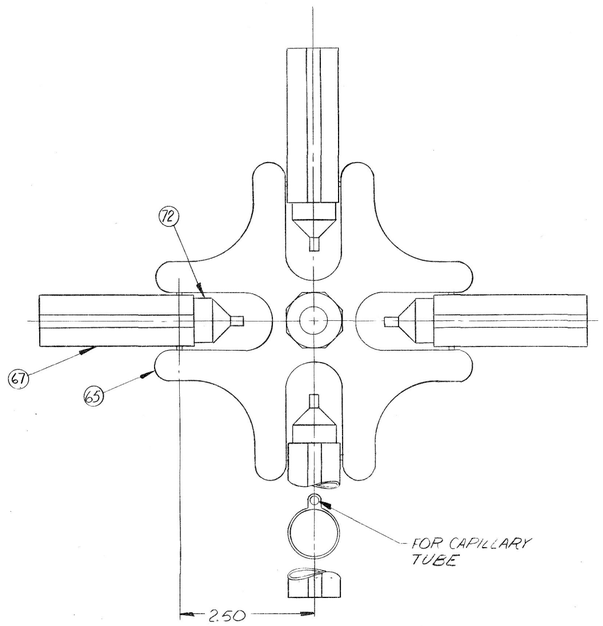
REV

SIZE E ER47E222812

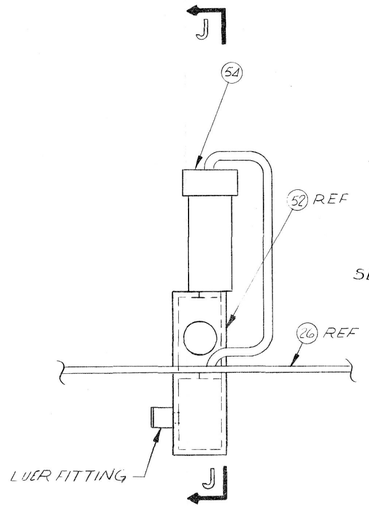
REV

FN-9064P Rev.C
PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

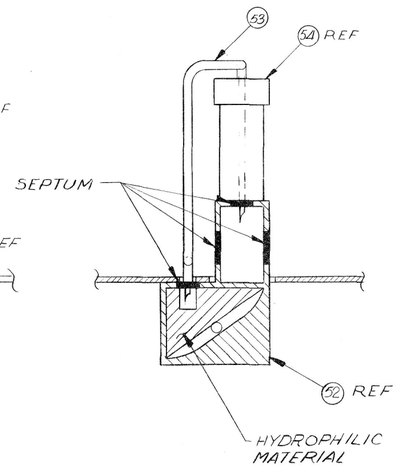


G4



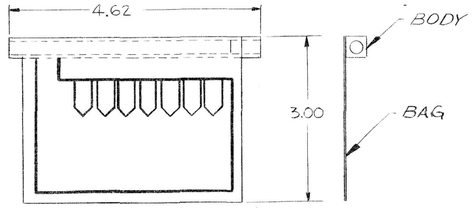
VIEW J-J

SCALE 2/1

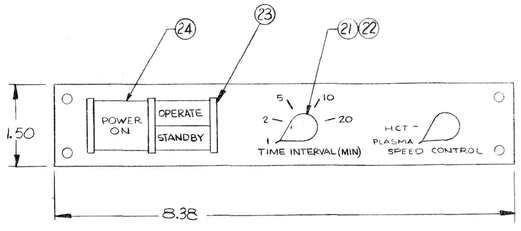


SECTION J-J

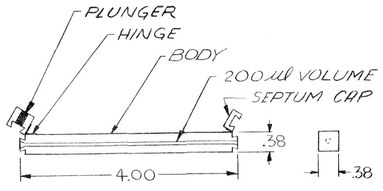
SCALE 2/1



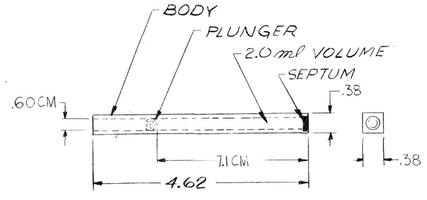
P69



G5



P70



P71

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	2	11	70
CHECKED	6	11	70
ENGR APPROVED	6	11	70
MFG APPROVED	6	11	70
PROJ ENGR	6	11	70
QUALITY	6	11	70
PROJECT MGR	6	11	70

GENERAL ELECTRIC

SPACE SYSTEMS LOC PHILA PA

MODULE, ASSEMBLY OF SAMPLE ACQUISITION & PREPARATION LAB ANALYSIS SUB SYSTEM IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E222812

SCALE NONE SHEET 3 OF 3

REV E ER47E222812

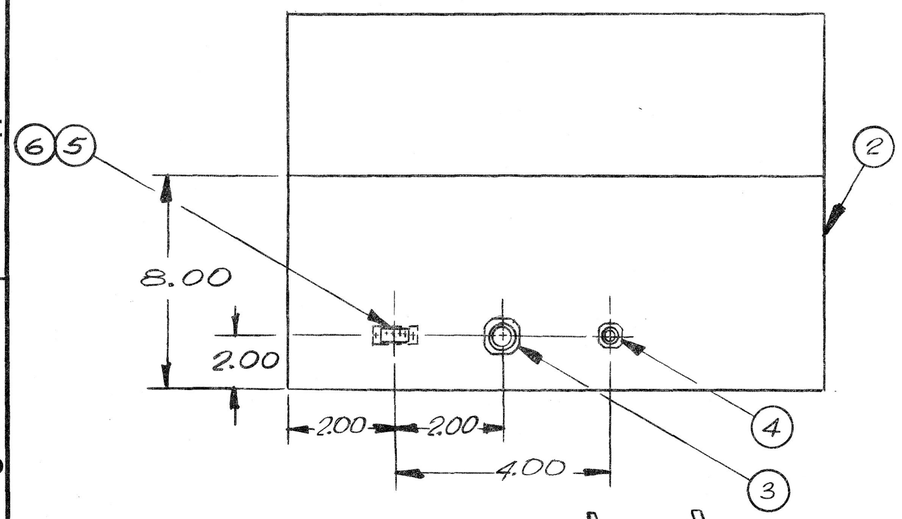
REV E ER47E222812

DIST TO

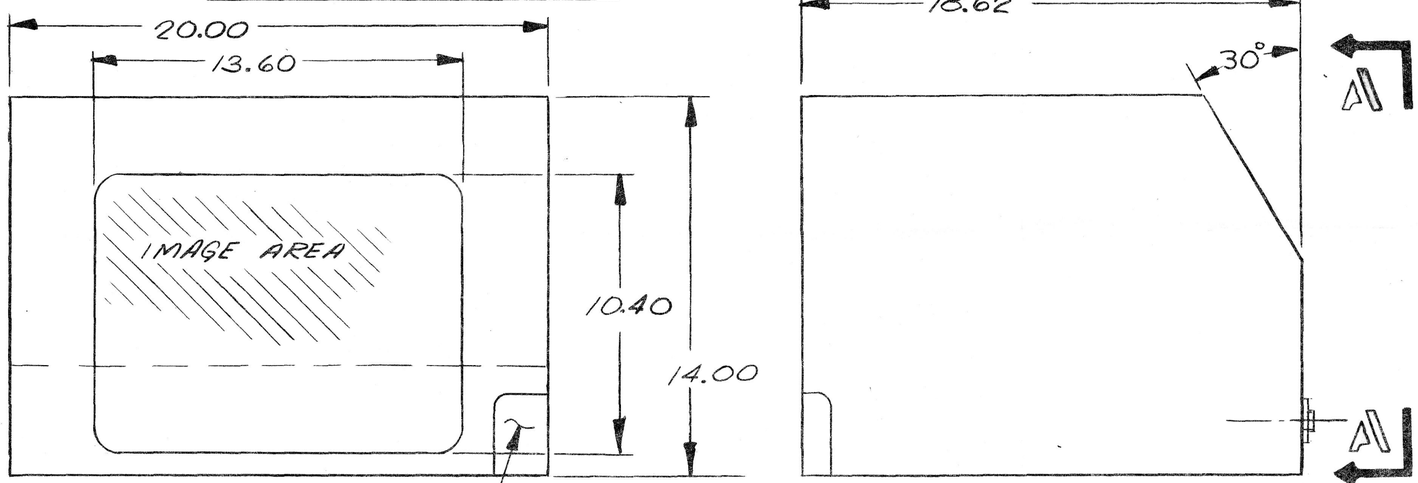
SIZE		REV
C	ER47C222813	

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED



VIEW A1 – A1



PRELIMINARY

NOTES:
1. PART TO CONFORM TO GE SPEC 70SD5374

VENDOR NOTES:
A. BENDIX ELECTRICAL COMPONENTS DIV. SIDNEY, N.Y. (OR EQUAL)
B ELECTRONIC PRODUCT DIV. HUGHES AIRCRAFT CO. NEWPORT BEACH, CALIF (OR EQUAL)

SIMILAR TO:
TM27B RCA

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

(G1)

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD5374	VIDEO MONITOR, COLOR SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
			10	CAS178M000	6	CONTACT	B
			1	MRSD0010S0D8N300	5	CONNECTOR	B
			1	LJT07RE-9-6P	4	CONNECTOR	A
			1	LJT07RE-15-35P	3	CONNECTOR	A
			1	47C222813P2	2	MONITOR	1
			X	47C222813G1	1	ASSEMBLY	

REQUIREMENTS PER ASS'Y.

LIST OF MATERIAL

47C222813G1	47E220696G1
DWG NO	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN E.C. Mangle	16	10	70
CHECKED M. Gerald	16	10	70
RELEASED P.C.M.R.	10	11	70
ENGRG J. Kappel Jr	16	10	70
B.J. Mierowsky	16	10	70
R.J. DiPalma	16	10	70
	16	10	70
	4	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT LOC. PHILA. PA

MODULE, ASSY OF
T.V. MONITOR, COLOR
CAD 155
1MBLM5

SIZE	CODE IDENT NO.	
C	23991	ER47C222813

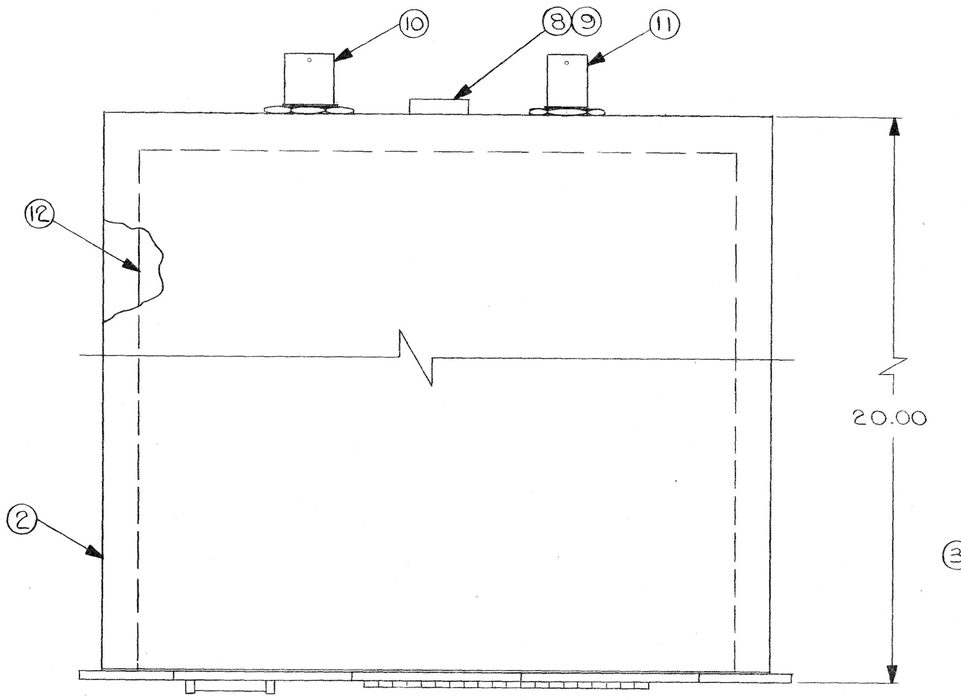
SCALE 1/4 SHEET 1 OF FIN

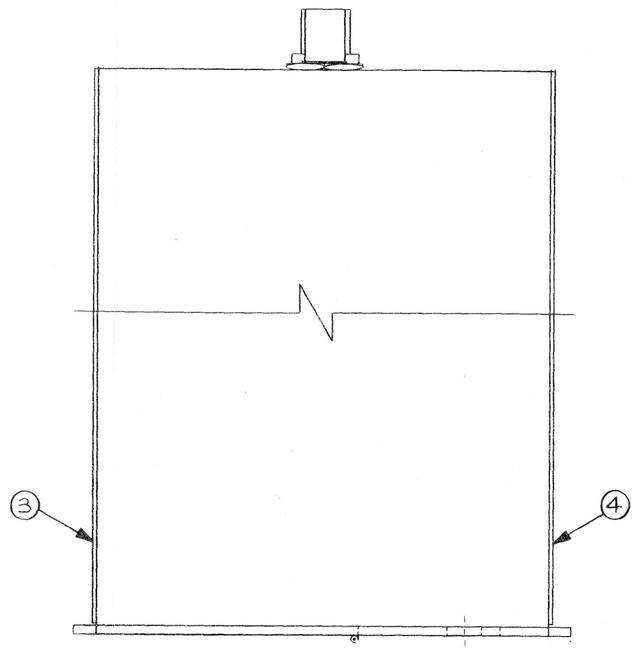
DIST TO

REV ER47C222813 SIZE C

FN903 F (11-68)
PRINTED IN U. S. A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





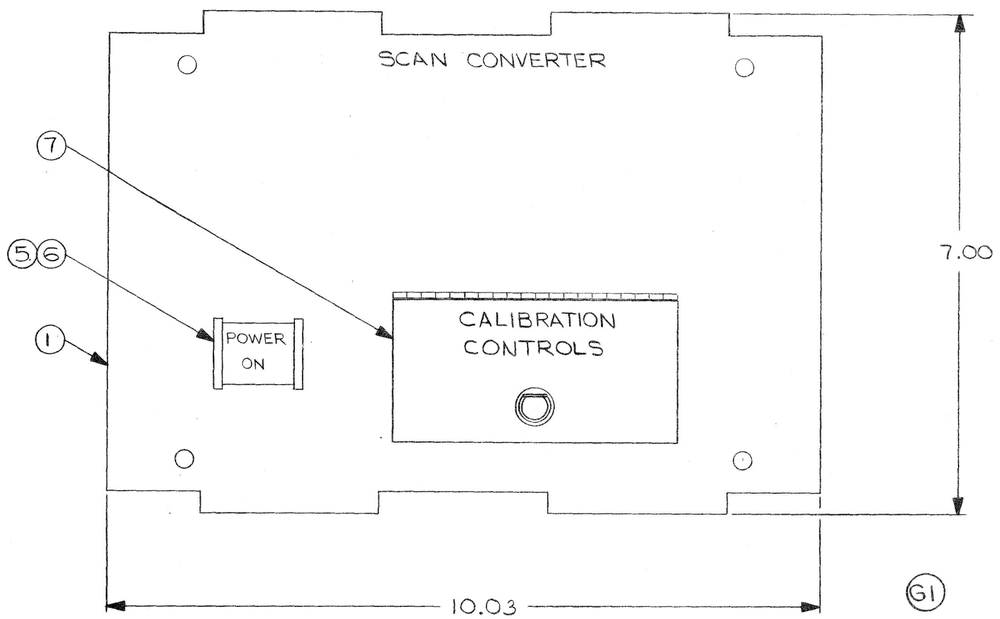
PRELIMINARY

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5378	SCAN CONVERTER SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

MAJOR FUNCTIONS | SUB ASSEMBLIES

1. 90 fps TO 30 fps VIDEO CONVERTER
2. STORAGE TUBE & READOUT SIMILIAR TO
   LCSCI - SCAN CONVERTER UNITS HUGHES AIRCRAFT
   PEP400 STORAGE TERMINAL PRINCETON
   ELECTRONICS PRODUCTS



REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

NOTES:

1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47D222814 GROUP NO OR PT. NO. AS APPLICABLE PER 118A1526, CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. PART TO CONFORM TO GE SPEC 70SD5378.

VENDOR NOTES

A. MASTER SPECIALTIES CO COSTA MESA, CALIF.
B. BENDIX ELEC, COMP DIV SIDNEY, N.Y.
C. HUGES AIRCRAFT CO. NEWPORT BEACH, CALIF.

1	47D222814P12	12	CONVERTER	4
1	LJT07RE-9-6P	11	CONNECTOR	B
1	LJT07RE-11-12P	10	CONNECTOR	B
10	CA5178M00	9	PIN, CONNECTOR	C
1	MR50020S 00BN300	8	CONNECTOR, COAX	C
1	47D222814P7	7	COVER, CONTROL, ACCESS	
2	90E505	6	BARRIER	A
1	90EA1C4F3J1WLIN1	5	SWITCH, PUSHBUTTON, ILLUM	A
1	47E222826G16	4	COVER, BOTTOM	
1	47E222826G12	3	COVER, TOP	
1	47E222826G4	2	MODULE	
X	47D222814G1	1	ASSEMBLY	

G4 G3 G2 G1 REQUIREMENTS PER ASS'Y.	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN FJ Hacker	16	10	70
CHECKED	20	10	70
APPROVED RELEASED RBE PC 912	14	11	70
ENGRG N. N. Brown	20	10	70
MFG	2	11	70
QUALITY	2	11	70
	24	10	70
	11	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

MODULE ASSY OF, SCAN CONVERTER
CAD S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D222814

SCALE 1/1 SHEET 1 OF 1

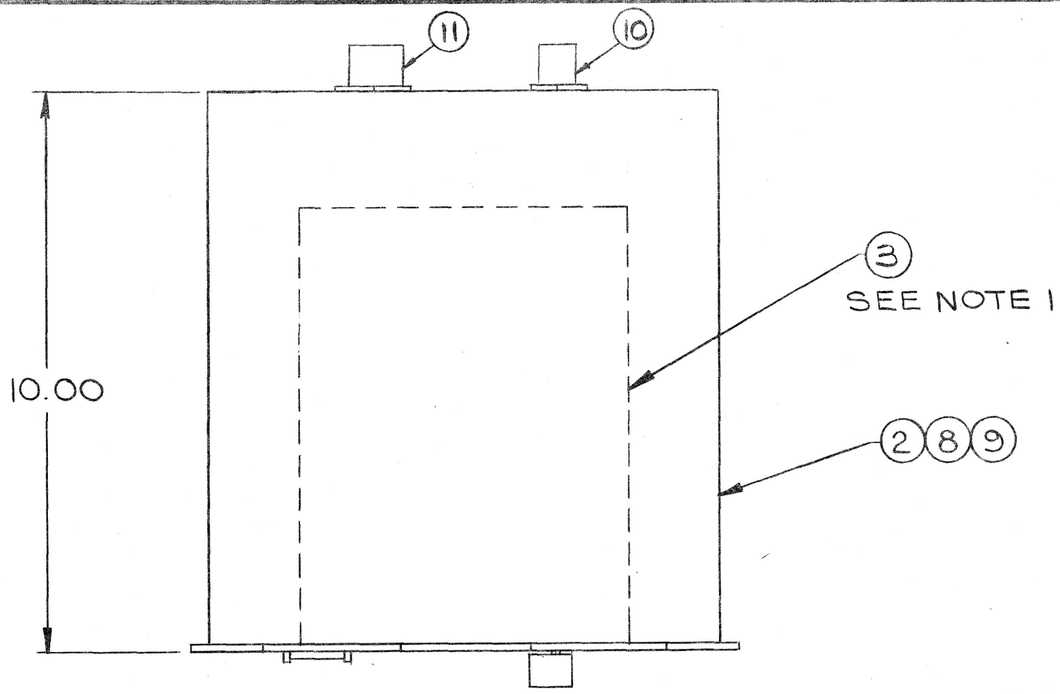
47D222814G1	47E220697G1
PART NO.	NEXT ASSY

DIST TO

SIZE		REV
C	ER47C222815	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

PRELIMINARY



REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

G1

NOTES:

1. ITEM 3 MUST CONFORM TO GE SPECIFICATION 70SD5370.
2. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
3. MARK GE47C222815 G1 PER 118A1526 CLASS 21.
4. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

SIMILAR TO:
MODEL 744-08 (LOCKHEED ELEC CO)
MODEL R103 (BORG WARNER CONTROLS)

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5370	ANALOG LOOP RECORDER MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s). N/A
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

VENDOR NOTES:
A. MASTER SPECIALITIES CO. COSTA MESA, CALIF.
B. OAK MFG. CO. CRYSTAL LAKE, ILL.
C. THE BENDIX CORP. ELEC. PROD. DIV. SIDNEY, N.Y.

47C222815G1	47E220697G1
PART NO.	NEXT ASSY

1	LJT07RE-15-37P	11	CONNECTOR	C
1	LJT07RE-9-6P	10	CONNECTOR	C
1	47E222826G14	9	COVER, BOTTOM	
1	47E222826G10	8	COVER, TOP	
4	90E505	7	BARRIER	A
2	90EA1C4F3J2 WL2N1	6	SWITCH, PUSH BUTTON, ILLUM	A
2	MS91528-0K1B	5	KNOB	
2	399217A	4	SWITCH, ROTARY	B
1	47C222815P3	3	RECORDER	
1	47E222826G2	2	MODULE	
X	47C222815G1	1	ASSEMBLY	
G4 G3 G2 G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASS'Y.			LIST OF MATERIAL	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN RJ Hacker	14	10	70
CHECKED [illegible]	22	10	70
RELEASED [illegible]	10	11	70
ENGRG [illegible]	3	11	70
[illegible]	3	11	70
[illegible]	-	-	-
[illegible]	30	10	70
[illegible]	30	10	70

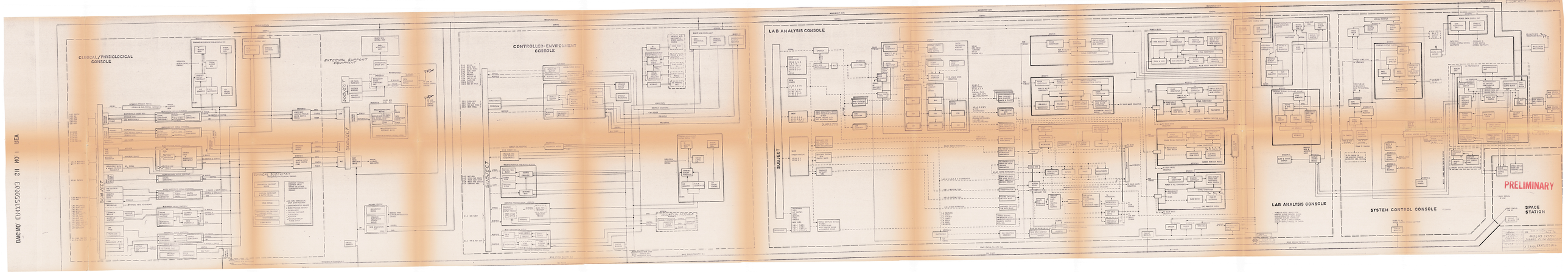
GENERAL ELECTRIC
SPACE SYSTEMS — LOC. PHILA, PA

MODULE ASSY OF
ANALOG LOOP RECORDER
CAD S/S
IMBLMS B4

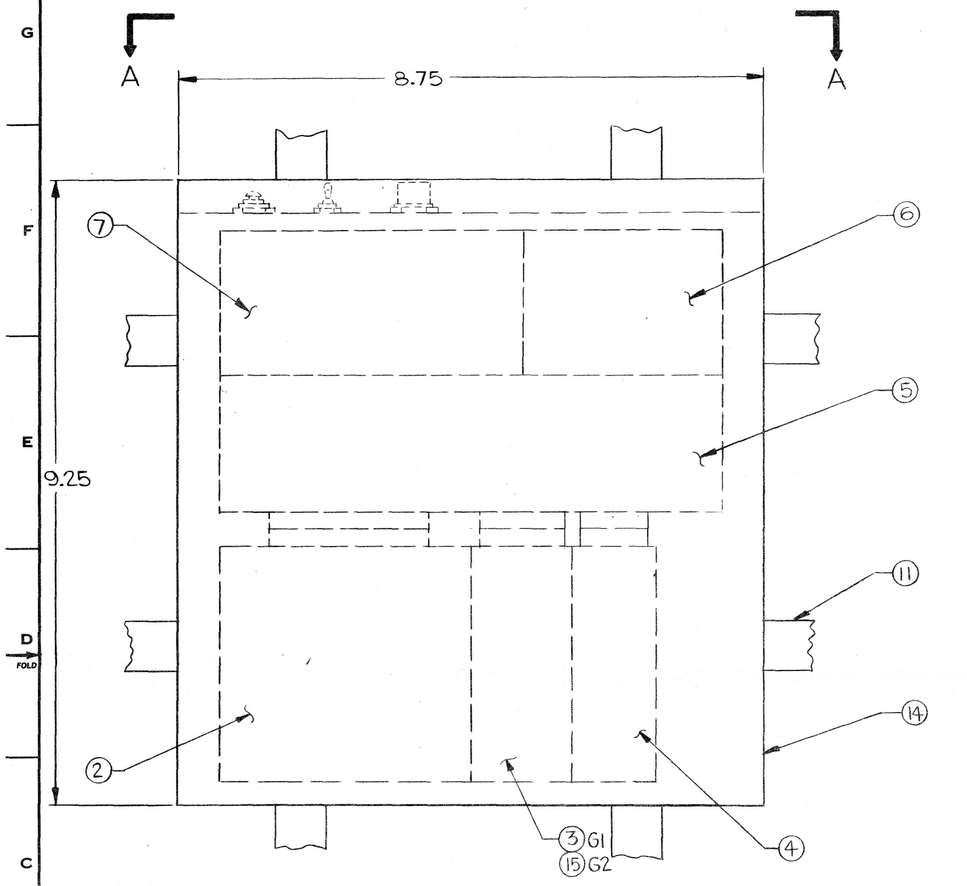
SIZE	CODE IDENT NO.	
C	23991	ER47C222815

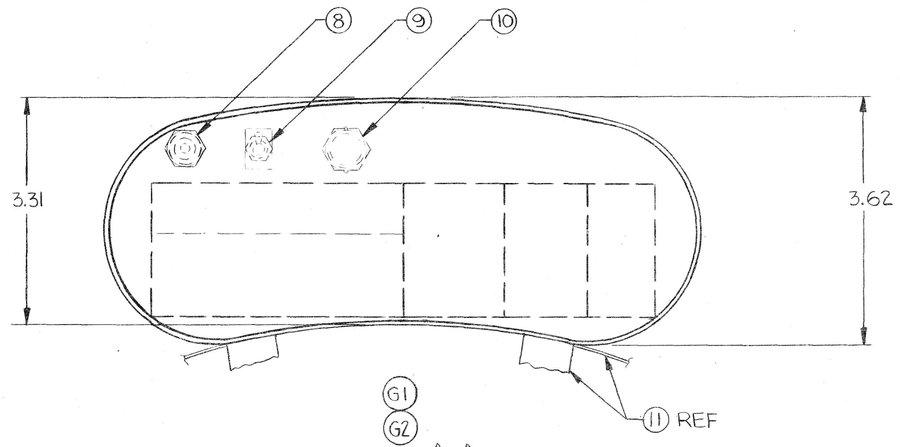
SCALE 1/2 | SHEET 1 OF 1 | DIST TO

FN903 F (11-68)
PRINTED IN U. S. A.


CLINICAL/PHYSIOLOGICAL CONSOLE
CONTROLLER-ENVIRONMENT CONSOLE
LAB ANALYSIS CONSOLE
LAB ANALYSIS CONSOLE
SYSTEM CONTROL CONSOLE
SUBJECT
EXTERNAL SUPPORT EQUIPMENT
PRELIMINARY
SPACE STATION

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





VENDOR NOTES:

A. ALCO ELECTRONIC PROD INC
LAWRENCE, MASS.

B. BENDIX ELEC PROD DIV
SIDNEY, N.Y.

NOTES:

1. INTERPRETATION OF DWG TERMS AND TOLERANCES PER 118A1664.
2. MARK "GE47D222817" (GROUP OR PART NUMBER AS APPLICABLE) PER 118A1526 CL 21
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

PRELIMINARY

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70SD5206	DATA AQUISITION & DISTRIBUTION SUBSYSTEM PRELIMINARY SPECIFICATION	
70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.	
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.	
70 SD 5282	BIOTELEMETRY CONDITIONER MODULE SPECIFICATION.	
70 SD 5287	MODULARITY GUIDELINES.	
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s).	1·1·1 - EOG 1·1·2 - EEG 1·1·3 - EMG
70 SD 5243	SAFETY DESIGN REQUIREMENTS.	1·1·3 - EMG
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.	1·2·1 - ECG
70 SD 5289	DATA TRANSPONDER MODULE SPECIFICATION	1·2·2 - VCG
70SD5393	DATA AQUISITION & DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION	1·2·4 - PCG/VbCG 1·5·1 - EAR CANAL TEMP.

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
				REQUIREMENTS PER ASSY.		LIST OF MATERIAL	
X	-			47D222817G2	16	ASSEMBLY	
1	-			47D222817P15	15	VECTORCARDIOGRAM S/C	
1	1			47D222817P14	14	BACK PACK	
X	X			47D220729	13	DIAG, SIGNAL FLOW BIO TELEMETRY	
X	X			47D220768	12	DIAG, SIGNAL FLOW DATA XPONDER	
AR	AR			47D222817-P11	11	HARNESS	
1	1			LJT07RE-9-6P	10	CONNECTOR	B
1	1			MSTG-106D	9	SWITCH, TOGGLE	A
1	1			47D222817-P8	8	ANTENNA	
1	1			-P7	7	ENCODER/DECODER	
1	1			-P6	6	POWER PACK, BATTERIES	
1	1			-P5	5	RF UNIT	
1	1			-P4	4	ANCILLARY (PCG, CORE TEMP) S/C	
-	1			-P3	3	ELECTROCARDIOGRAM S/C	
1	1			47D222817-P2	2	NEUROLOGICAL S/C	
-	X			47D222817G1	1	ASSEMBLY	

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47D222817G2	47E220696G1
47D222817G1	47E220696G1
PART NO	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
ALL SURF. ✓
MATERIAL—

SIGNATURES		DAY	MO	YR
DRAWN	L Salerno	4	11	70
CHECKED	Miller A	5	11	70
ISSUED RELEASED	PE SR	12	11	70
ENGRG				
	R.J. Murphy	6	11	70
	R.S. Lilleland	6	11	70
-		6	11	70
		6	11	70

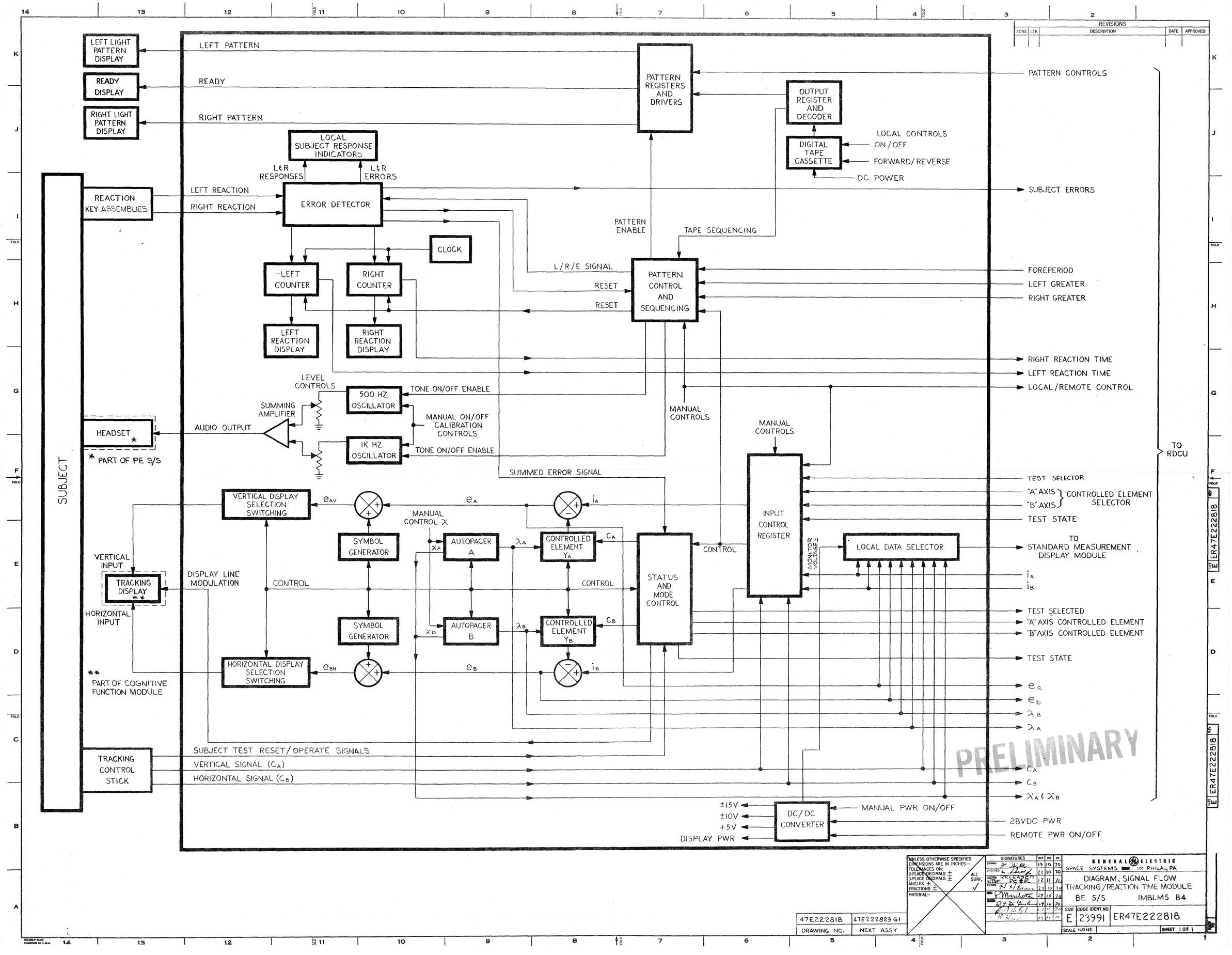
GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

BACK PACK, ASSY OF
BIO-TELEMETRY
PE SUB SYSTEM
IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D222817

SCALE 1:1 SHEET 1 OF

DIST TO



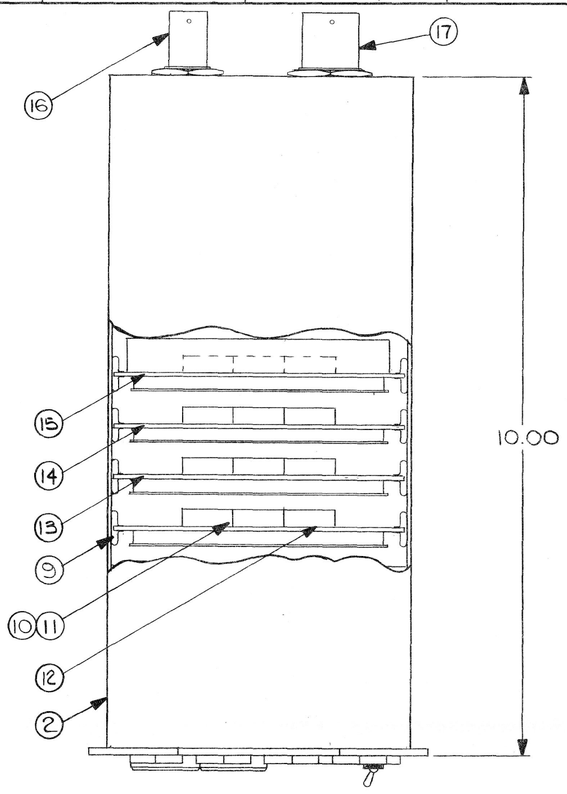
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

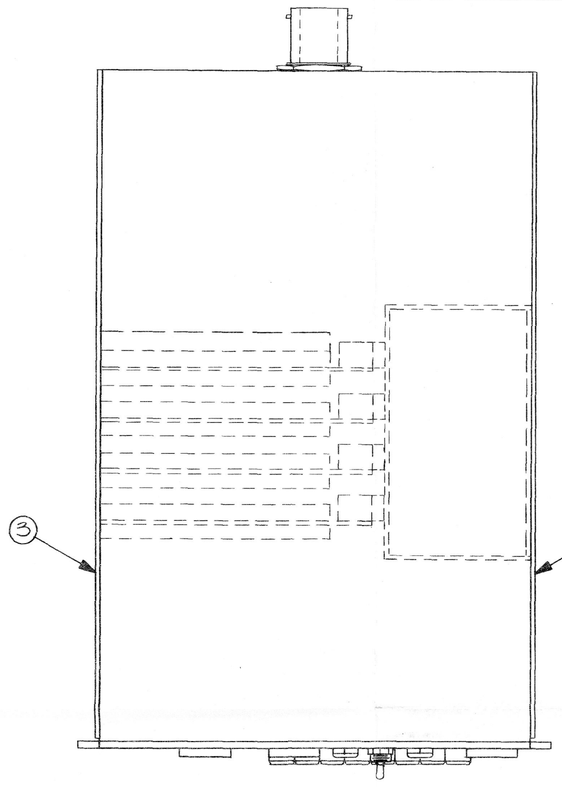
47E222818	47E222823 G1	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2 PLACE DECIMALS ± 3 PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓	GENERAL ELECTRIC SPACE SYSTEMS LOC PHILA, PA
DRAWING NO.	NEXT ASSY		DIAGRAM, SIGNAL FLOW TRACKING/REACTION TIME MODULE BE S/S IMBLMS B4
			SIZE E · CODE IDENT NO. 23991 · ER47E222818 · SCALE NONE · SHEET 1 OF 1

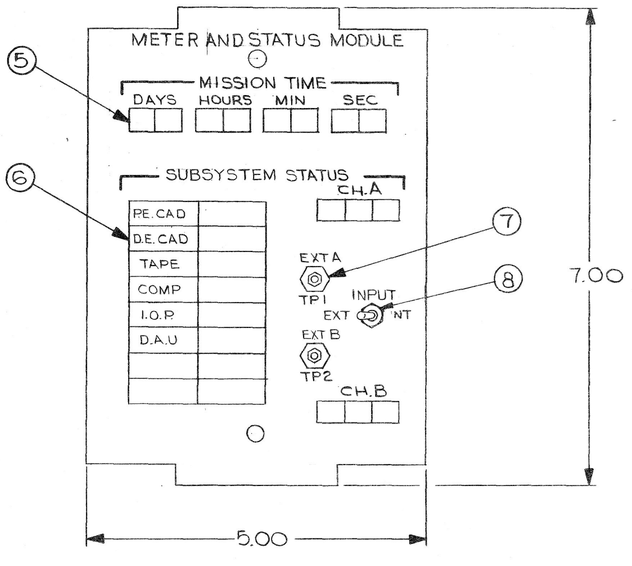
SIGNATURES (DAY / MO / YR)

DRAWN	F. Hill	19	10 70
CHECKED	A. Thrall	21	10 70
MGR ENGR LDR	RELEASED PER ECP	12	11 70
ENGRG	R. Brown	23	10 70
QUAL	P. Marchetta	29	10 70
	R. Gulick	29	10 70
		2	11 70
		29	11 70

USED ON ER47E222818 REV E
USED ON ER47E222818 REV E







G1

MAJOR SUBASSEMBLIES
A/N DISPLAY LAMPS
MONSANTO MAN-1

VENDOR NOTES:

A. MASTER SPECIALTIES CO.
COSTA MESA, CALIF.

B. ALCO ELECTRONIC PROD. INC
LAWRENCE, MASS.

C. MONSANTO CO. ELEC SPEC PROD
CUPERTINO, CALIF.

D. BENDIX, ELEC. COMPONENT DIV
SIDNEY, NY.

E. BIRTCHER CORP
MONTEREY PARK, CALIF.

F. AMP CORP
HARRISBURG, PA.

47D222819G1	47E220699G1
47D222819G1	47E220697G1
PART NO.	NEXT ASSY

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED

PRELIMINARY

NOTES:

1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47D222819 GROUP NO. OR PT. NO. AS APPLICABLE PER 118A1526, CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5368	METER & STATUS DISPLAY SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

		ITEM NO.	DESCRIPTION	SEE NOTE
X	47C220770	18	DIAGRAM, SIGNAL FLOW	
1	LJT07RE9-6P	17	CONNECTOR	D
1	LJT07RE17-55P	16	CONNECTOR	D
1	47D222819P15	15	POWER SUPPLY	
1	47D222819P14	14	ANALOG TO DIGITAL CONVERTER DIGITAL STORAGE & LAMP DRIVERS	
1	47D222819P13	13	TIME CODE STORAGE & LAMP DRIVERS	
1	47D222819P12	12	STATUS STORAGE & LAMP DRIVERS	
4	202932-2	11	CONNECTOR	F
4	202933-2	10	CONNECTOR	F
8	17B-7-1	9	RETAINER, P.C.B	E
1	MST6-106P	8	SWITCH, TOGGLE	B
2	MS16108-8A	7	TEST JACK, YELLOW	
16	6208AND3F1L2N1W	6	LIGHTS, WORD INDICATOR	A
14	MAN-1	5	LAMP, ALPHA-NUMERIC	C
1	47E222825P14	4	COVER, BOTTOM	
1	47E222825G10	3	COVER, TOP	
1	47E222825G2	2	MODULE	
X	47D222819G1	1	ASSEMBLY	

G4	G3	G2	G1	IDENTIFICATION NO.
REQUIREMENTS PER ASS'Y.				

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES		DAY	MO	YR
DRAWN	R.D. Hacker	20	10	70
CHECKED	[illegible]	22	10	70
APPROVED S.O.	RELEASED per 12	10	11	70
ENGRG	J. Klysyal	22	10	70
	R. J. Mynarski	22	10	70
	R.J. Day Jim Gross	22	10	70
	A.R. Hunt	22	10	70
	[illegible]	22	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

MODULE, ASSY OF METER AND STATUS
CAD 5/5
IMBLMS B4

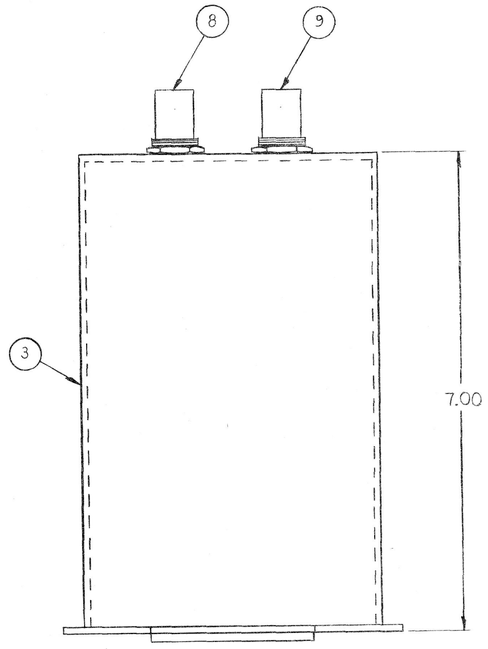
SIZE	CODE IDENT NO.	
D	23991	ER47D222819

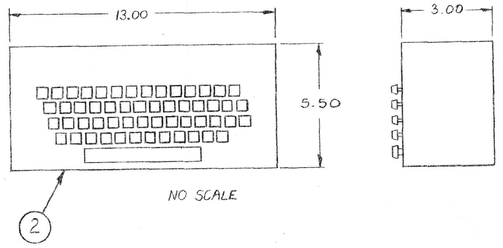
SCALE 1/1 SHEET 1 OF 1

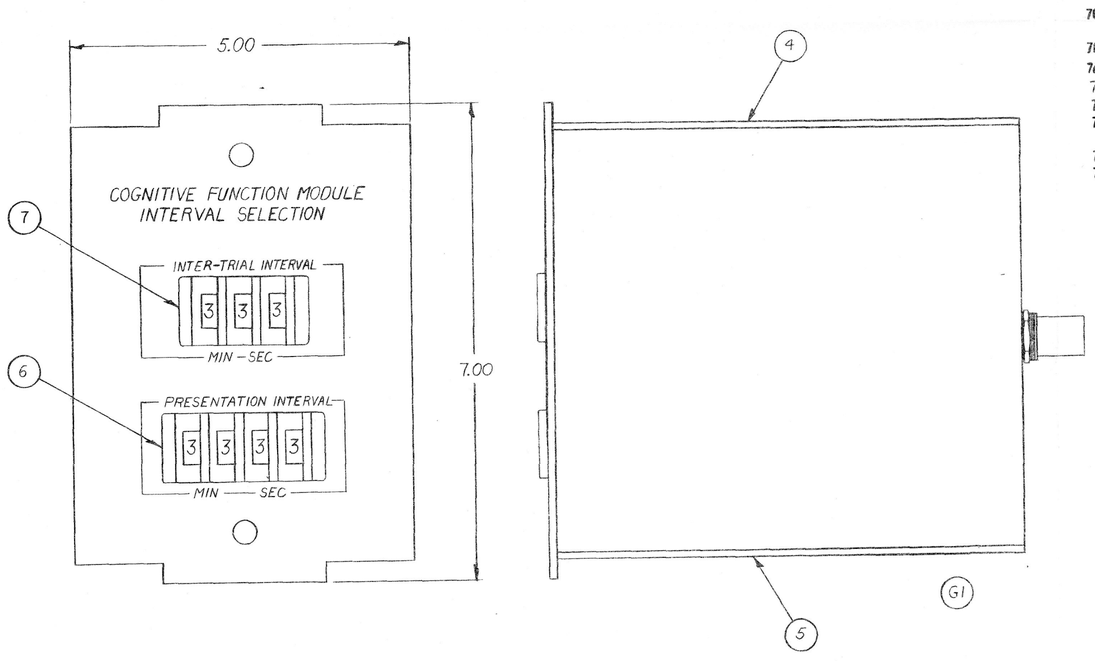
REV D ER47D222819

DIST TO

PRINTED IN U.S.A.







NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47D222820G_ OR P. NO. AS APPLICABLE PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. PART MUST CONFORM TO GE SPEC TOSD5330.

VENDOR NOTES:
A. CHERRY ELEC PROD CORP. HIGHLAND PARK, LL.
B. BENDIX ELEC COMP DIV. SIDNEY, N.Y.

PRELIMINARY

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5254	BEHAVORIAL EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5389	BEHAVORIAL EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70SD5330	COGNITIVE FUNCTION MODULE SPECIFICATION
70SD5339	VISUAL DISPLAY PROJECTOR MODULE SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s). 2.5.1 COG. FUNCTION
70 SD 5243	SAFETY DESIGN REQUIREMENTS
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

REQUIREMENTS PER ASS'Y.	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
X	47E222821G1	12	STD MEASUREMENT DISPLAY MOD	
X	47E222821G2	11	DISPLAY PANEL, INTERNAL CEC	
X	47D220774	10	DIAG, SIGNAL FLOW	
1	LJT07RE-9-35P	9	CONNECTOR	B
1	LJT07RE-9-6P	8	CONNECTOR	B
1	T20-01M-3	7	SWITCH, THUMBWHEEL	A
1	T20-01M-4	6	SWITCH, THUMBWHEEL	A
1	47E222825P13	5	COVER, BOTTOM	
1	47E222825G9	4	COVER, TOP	
1	47E222825G1	3	MODULE	
	47D222820P2	2	KEYBOARD, ELECTRONIC DATA ENTRY	4
X	47D222820G1	1	ASSEMBLY	

LIST OF MATERIAL

47D222820P2	47E220100G1
47D222820G1	47E220700G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN JOHN F KRAIGER	23	10	70
CHECKED	26	10	70
RELEASED	10	11	70
ENGR	3	11	70
MFG	2	11	70
QUALITY	3	11	70
	5	11	70
	4	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

MODULE, ASSY OF COGNITIVE FUNCTION BE S/S IMBLMS B4

SIZE D | CODE IDENT NO. 23991 | ER47D222820

SCALE 1:1 | SHEET 1 OF 1

ZONE	LTR	REVISIONS DESCRIPTION	DATE	APPROVED

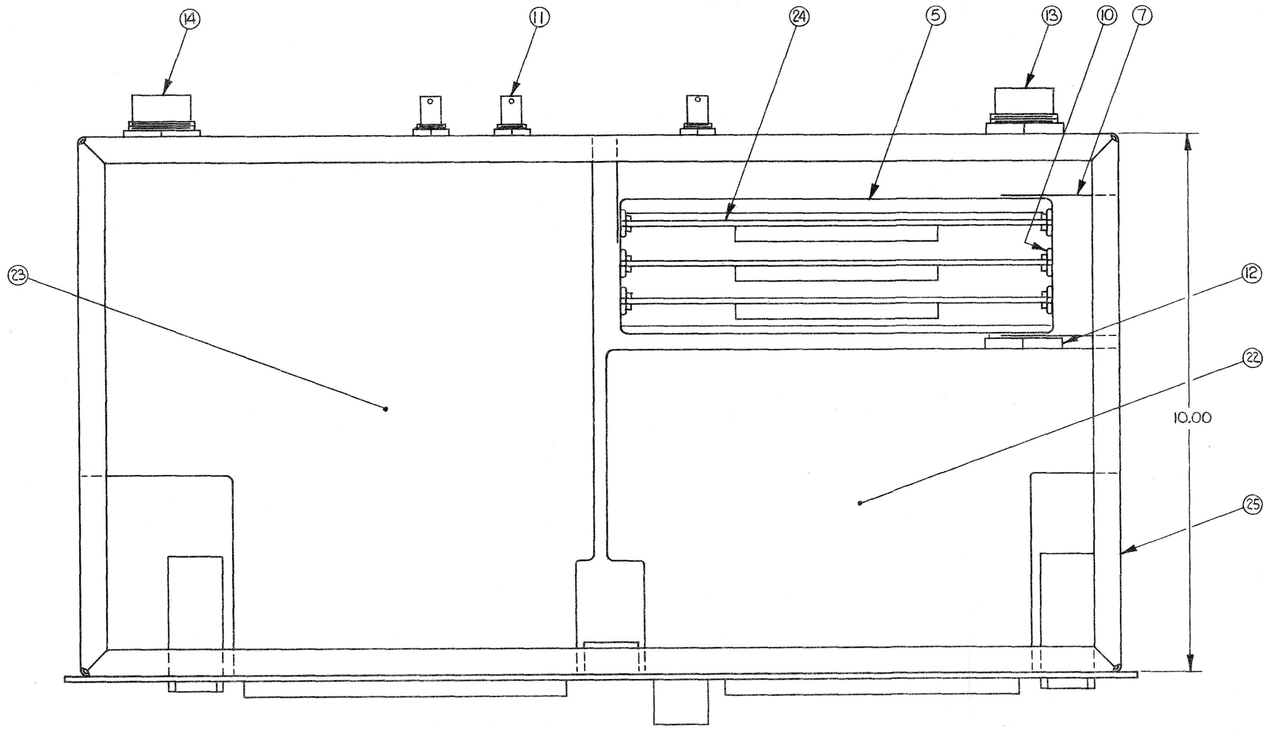
SIZE D ER47D222820 REV

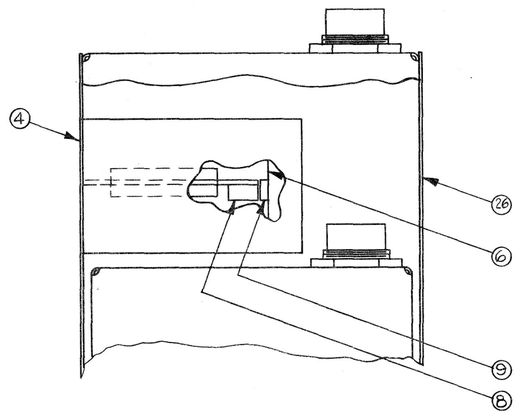
DIST

PRINTED IN U.S.A.

NOTES
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222821(GROUP OR PART NO. AS APPLICABLE) PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

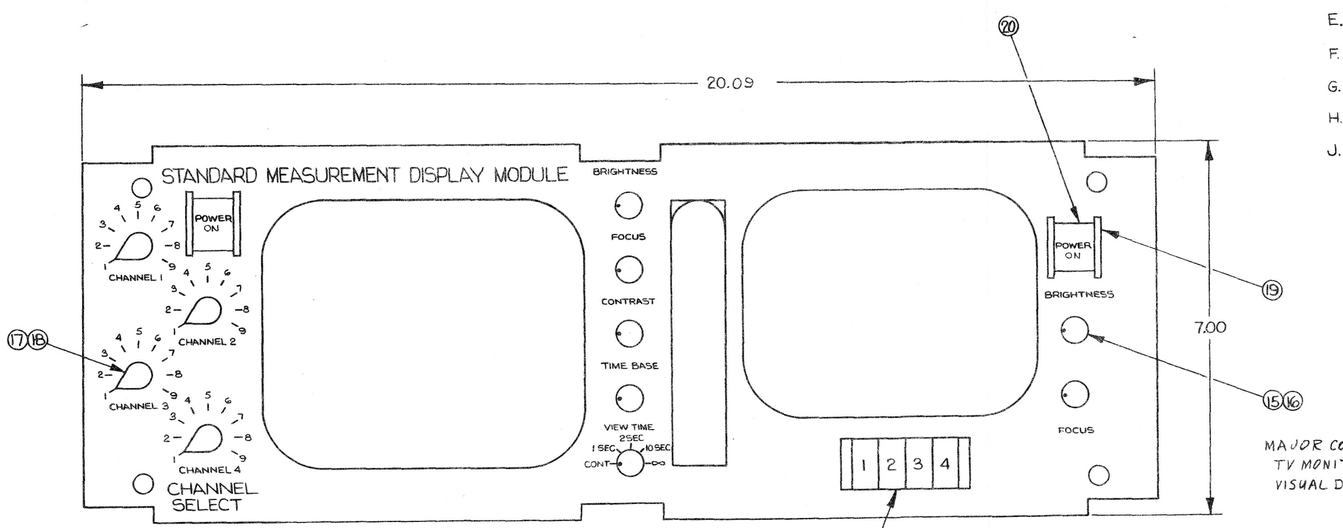




PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES



THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5366	STANDARD MEASUREMENT DISPLAY MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(S).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
70SD5330	COGNITIVE FUNCTION MODULE SPECIFICATION
70SD5332	TRACKING/REACTION TIME MODULE SPECIFICATION

VENDOR NOTES
A. AMP CORP HARRISBURG, PA
B. THE BIRTCHER CORP MONTEREY PARK, CALIF
C. BENDIX ELECTRICAL COMPONENT DIV SIDNEY, NEW YORK
D. MASTER SPECIALTIES CO. COSTA MESA, CALIF
E. ALCO ELECTRONIC PROD CO. LAWRENCE, MASS
F. AMPHENOL CORP DANBURY, CONN
G. OAK MFG CO. CRYSTAL LAKE, ILL
H. BOURNS INC RIVERSIDE, CALIF
J. CHERRY ELEC PROD CORP HIGHLAND PARK, ILL

MAJOR COMPONENTS SPECIFICATIONS
TV MONITOR, BLK&WHT 70SD5375 P2
VISUAL DISPLAY PROJ 70SD5379 P3

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
			1	399217A	35	SWITCH, ROTARY	G
		1		MSTG-106D	34	SWITCH, TOGGLE	E
		X		47E222802	33	DIAG, SIGNAL FLOW	
	2	2		90E505	32	BARRIER	D
	1	1		47C220771P2	31	VISUAL DISPLAY PROJECTOR	
	1	1		47C222840P1	30	TV MONITOR, BLK & WHT	
	1	1		47E222821P29	29	COVER, TOP	
	1	1		P28	28	COVER, BOTTOM	
	1	1		P27	27	MODULE	
			1	P26	26	COVER, BOTTOM	
			1	47E222821P25	25	MODULE	
			3	47E222821P24	24	PCB	
			1	47C222840P2	23	TV MONITOR, BLK & WHT	
			1	47C220771P3	22	VISUAL DISPLAY PROJECTOR	
			1	T20-01-M4	21	SWITCH, THUMBWHEEL	J
1	1		2	90EAIC4F3JIWLINI	20	SWITCH, ILLUMINATED PUSHBUTTON	D
			4	90E501	19	BARRIER	D
			4	399217A	18	SWITCH, ROTARY	G
			4	MS91528-0K1B	17	KNOB	
3	3		7	3535S	16	POTENTIOMETER	H
3	3		7	MS-91528-0E1B	15	KNOB	
1	1		1	LT07RE-17-35P	14	CONNECTOR, 55 PIN	C
1	1		1	LT07RE-17-35PA	13	CONNECTOR, 55 PIN	C
			1	LT07RE-17-26P	12	CONNECTOR, 26 PIN	C
2	2		3	31245	11	CONNECTOR, COAXIAL	F
			6	17B-4-1	10	RETAINER, PCB	B
			3	202932-1	9	CONNECTOR, 71 PIN	A
			3	202933-1	8	CONNECTOR, 71 PIN	A
			3	47E222821P7	7	BRACKET	
			1	47E222821P6	6	BASE, CONNECTOR MOUNTING	
			1	47E222821P5	5	ENCLOSURE, PCB	
			1	47E222821P4	4	COVER, TOP	
X				47E222821G3	3	ASSEMBLY	
X	X			47E222821G2	2	ASSEMBLY	
X	X	X		47E222821G1	1	ASSEMBLY	

LIST OF MATERIAL

PART NO.	NEXT ASSY
47E222821G1	47E222822G1
47E222821G1	47E220698G1
47E222821G3	47E220699G1
47E222821G2	47E220700G1
47E222821G1	47E220700G1

G1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	29	10	70
CHECKED	3	11	70
ENGR APPD	9	11	70
MFR	3	11	70
	4	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA

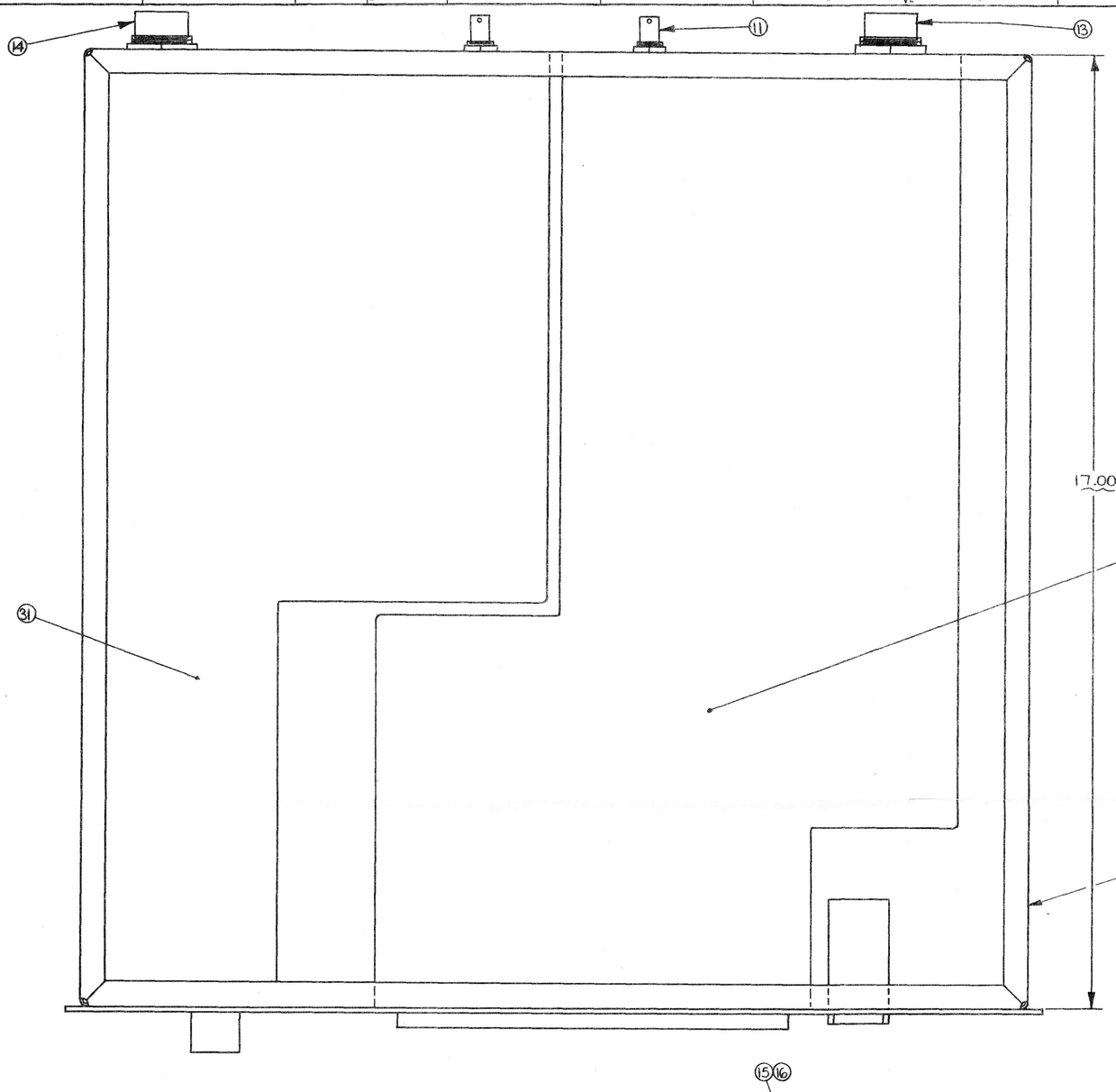
MODULE, ASSEMBLY OF STANDARD MEASUREMENT DISPLAY
CAD S/S
IMBLM, 1&1

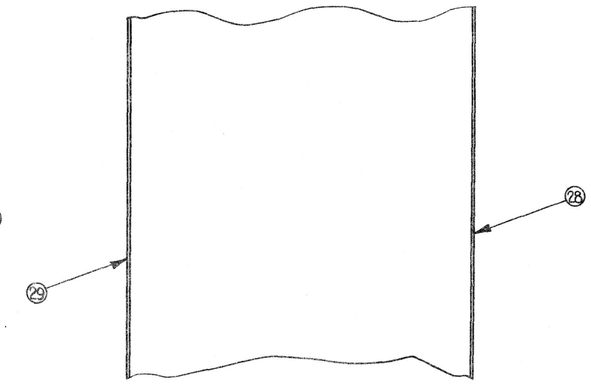
SIZE	CODE IDENT NO.	
E	23991	ER47E222821

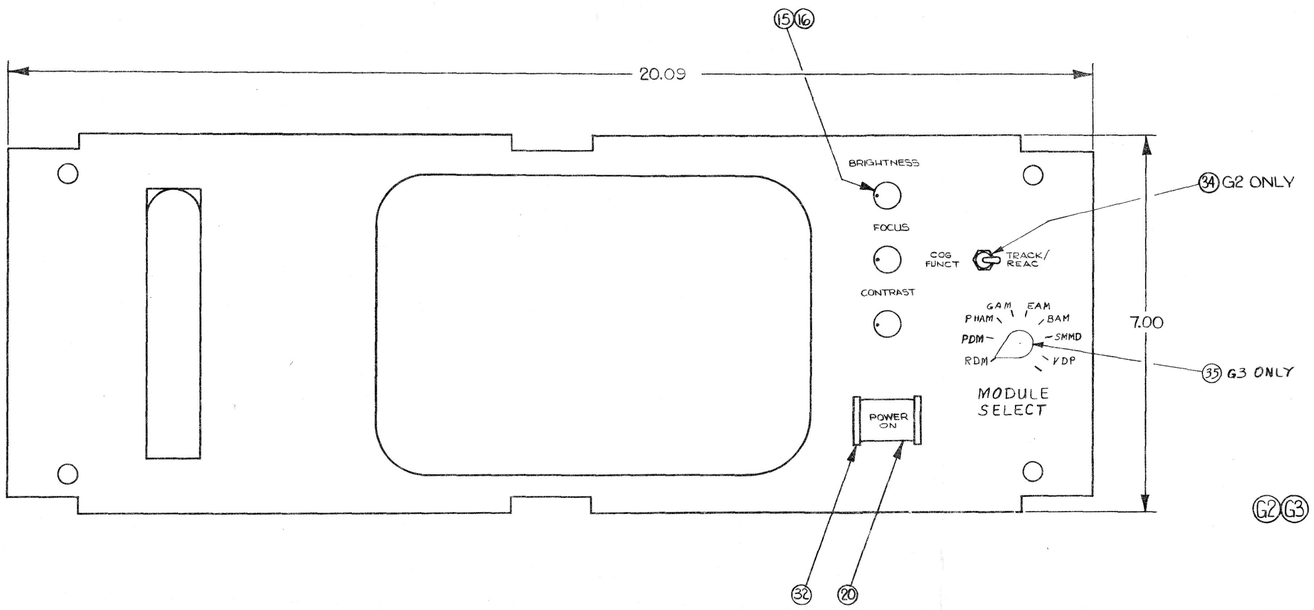
SCALE 1/1 SHEET 1 OF 2

REV E ER47E222821 REV A ER47E222821 DIST DTO

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED







PRELIMINARY

MAJOR COMPONENTS SPECIFICATIONS
TV MONITOR, BLK & WHT 70SD5375P1
VISUAL DISPLAY PROJ 70SD5379P2

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	29	10	70
CHECKED	3	11	70
ENGR APPD	11	11	70
ENGR	4	11	70
MFGR	5	11	70
QUALITY	4	11	70
			11
	4		70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA

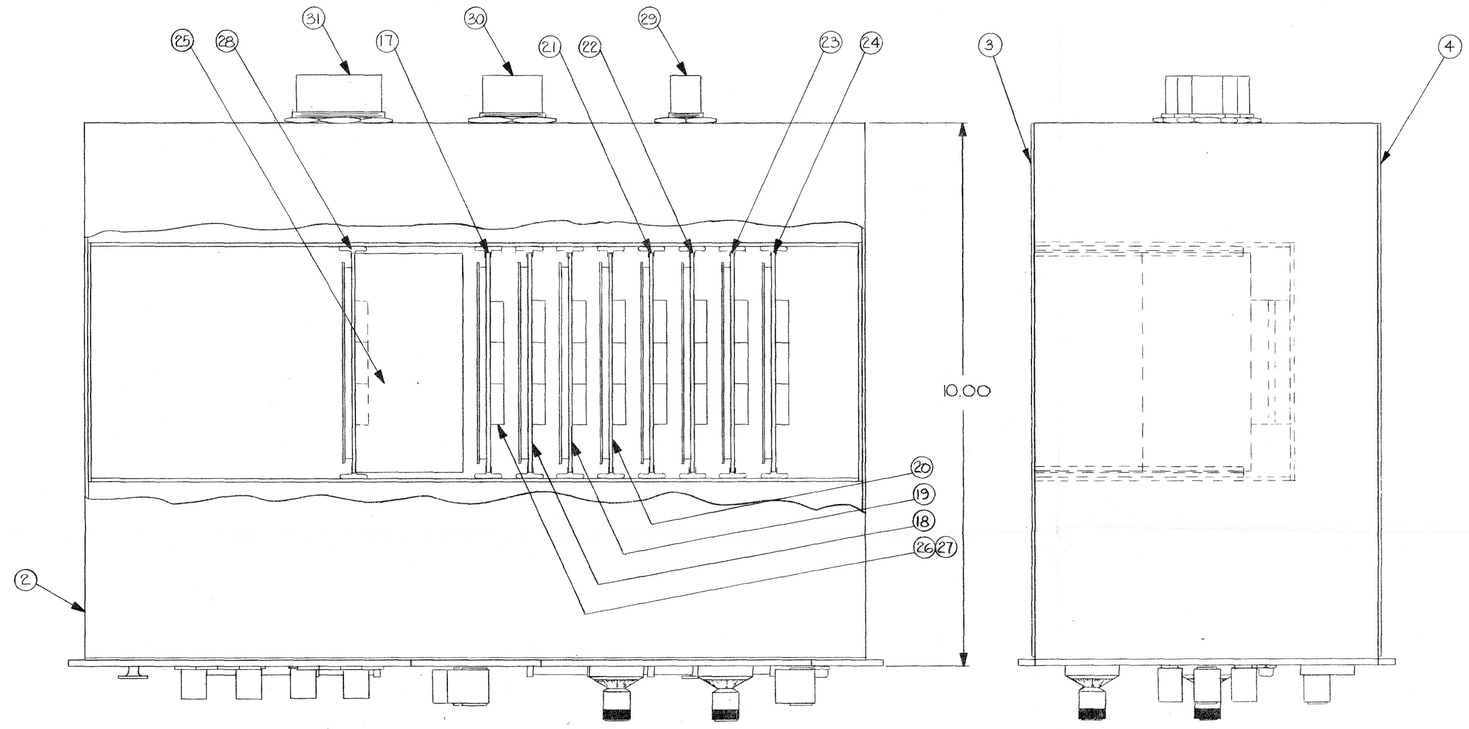
MODULE, ASSEMBLY OF
STANDARD MEASUREMENT DISPLAY
CAD 3/5
IMBLMS B4

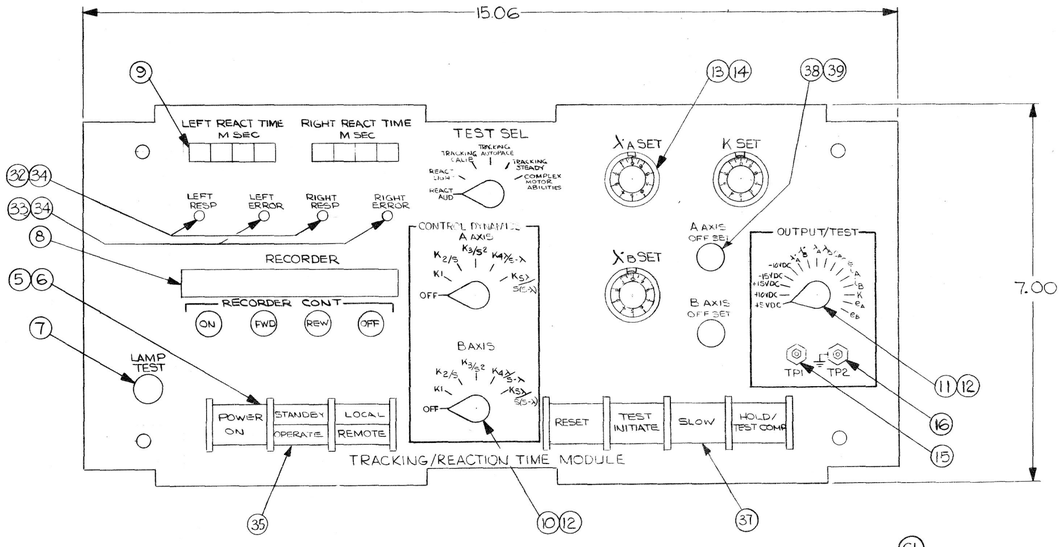
SIZE	CODE IDENT NO.	
E	23991	ER47E222821

SCALE 1/1 SHEET 2 OF 2

ER47E222821 REV
SIZE E
FOLD
DIST TO

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5254	BEHAVORIAL *EQUIPMENT* SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5389	BEHAVORIAL *EQUIPMENT* SUBSYSTEM DESIGN CONCEPT SELECTION.
70SD5332	*TRACKING & REACTION TIME MODULE SPECIFICATION*
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s). 2.4.3 TRACKING 2.4.4 REACTION TIME 2.4.5 COMPLEX MOT. ABIL.
70 SD 5243	SAFETY DESIGN REQUIREMENTS
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS

PRELIMINARY

NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47E222818 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526, CLASS 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

VENDOR NOTES

A. MONSANTO CO. ELEC SPEC. PROD CUPERTINO, CALIF.
B. HEWLETT PACKARD PALO ALTO, CALIF
C. BOURNES, INC RIVERSIDE, CALIF.
D. CONTROLS CO. OF AMERICA FOLCROFT, PA
E. MASTER SPECIALTIES CO. COSTA MESA, CALIF.
F. THE BIRTCHER CORP MONTEREY PARK, CALIF.
G. AMP INCORPORATED HARRISBURG, PA.
H. BENDIX ELEC COMP DIV. SIDNEY, N.Y.
J. OAK MFG CO. CRYSTAL LAKE, ILL.

G4	G3	G2	G1	REQUIREMENTS PER ASSY.	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
				2	35355	39	POTENTIOMETER	C
				2	MS91528-0D1B	38	KNOB	
				1	90EF3JIWLIN1	37	INDICATOR, ILLUMINATED	E
				X	47E222818	36	DIAG, SIGNAL FLOW	
				2	30EA1C4F3J2WL2N1	35	SWITCH, PUSHBUTTON, ILLUM	E
				4	5082-4409	34	CLIP, MOUNTING	B
				2	5082-4403	33	LAMP, RED	B
				2	5082-4403	32	LAMP, YELLOW	B
				1	LJT07RE-25-35P	31	CONNECTOR, 128 PIN	H
				1	LJT07RE-17-35P	30	CONNECTOR, 55 PIN	H
				1	LJT07RE-9-6P	29	CONNECTOR, 6 PIN	H
				18	17B-7-1	28	RETAINER	F
				9	202932-2	27	CONNECTOR	G
				9	202933-2	26	CONNECTOR	G
				1	47E222823P25	25	DC-DC CONVERTER	
				1	P24	24	B TRACKING CONTROLLED ELEMENT SELECT	
				1	P23	23	A TRACKING CONTROLLED ELEMENT SELECT	
				1	P22	22	B TRACKING AUTOPACER & SYMBOL GEN.	
				1	P21	21	A TRACKING AUTOPACER & SYMBOL GEN.	
				1	P20	20	TRACKING CONTROL & INPUT REGISTER	
				1	P19	19	GATED AUDIO OSILLATORS & AMPLIFIER	
				1	P18	18	CLOCK, REACTION COUNTER REC. CONTROL & DECODING	
				1	47E222823P17	17	REACTION PATTERN CONTROL & SEQUENCING	
				1	MS16108-3A	16	TEST JACK, BLACK	
				1	MS16108-8A	15	TEST JACK, YELLOW	
				3	H-491	14	DIAL, TURN COUNTING	C
				3	3438S	13	POTENTIOMETER	C
				4	MS91528-0K1B	12	KNOB	
				1	399659MF	11	SWITCH, ROTARY	J
				3	399217A	10	SWITCH, ROTARY	J
				8	MAN 1	9	DISPLAY, ALPHA-NUMERIC,	A
				1	47E222823P8	8	RECORDER	
				1	W9601-B	7	SWITCH, PUSH BUTTON	D
				9	90E505	6	BARRIER	E
				4	30EA1C4F3J1WL1N1	5	SWITCH, PUSHBUTTON, ILLUM	E
				1	47E222827G14	4	COVER, BOTTOM	
				1	47E222827G10	3	COVER, TOP	
				1	47E222827G2	2	MODULE	
				X	47E222823G1	1	ASSEMBLY, CONTROL UNIT	

LIST OF MATERIAL

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47E222823G1 | 47E220700G1
PART NO. | NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF

SIGNATURES	DAY	MO	YR
DRAWN	22	10	70
CHECKED	27	10	70
ENGR APPR	14	11	70
ENGR	24	10	70
MFG	27	10	70
	2	11	70
	2	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

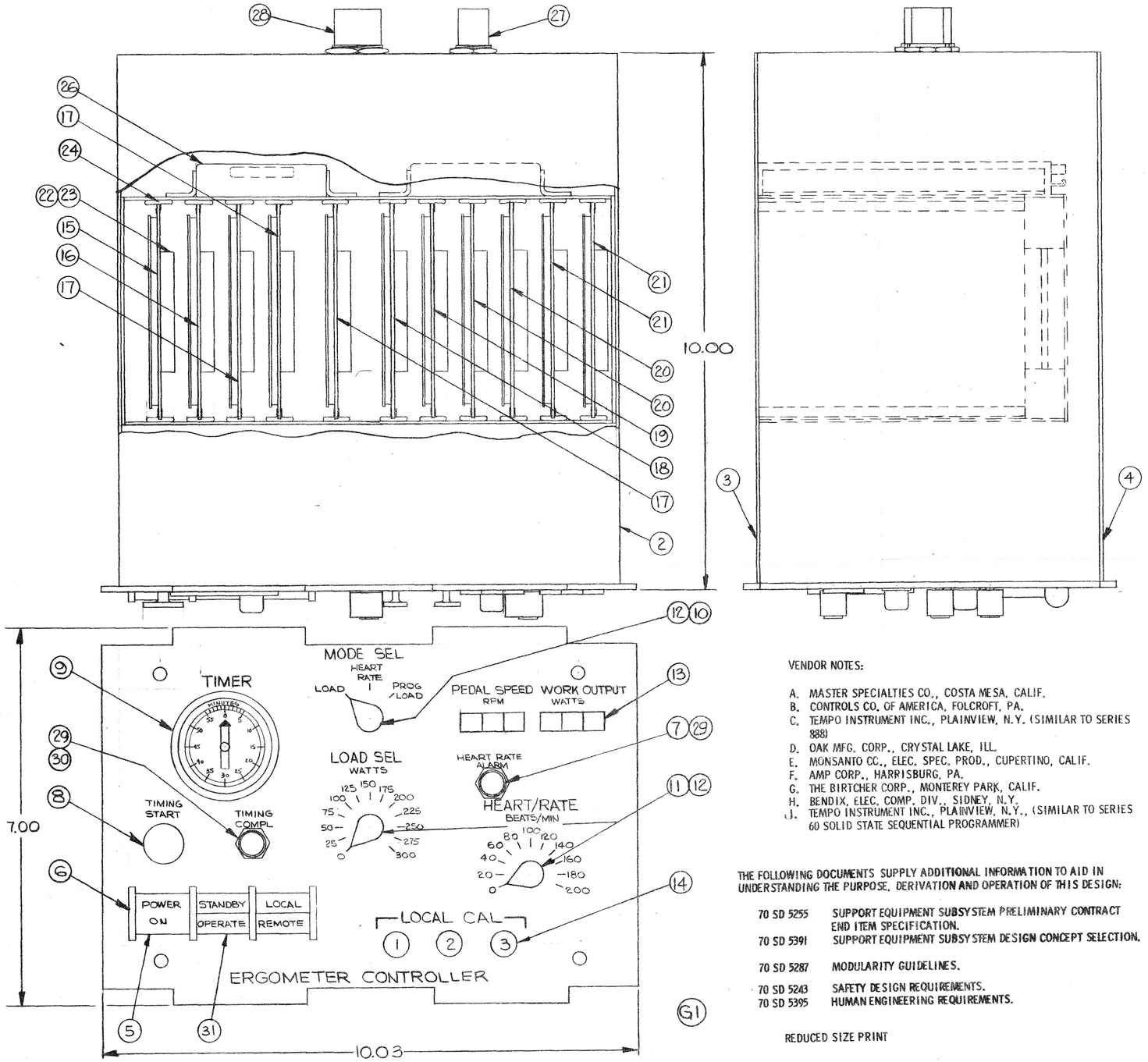
MODULE ASSEMBLY OF TRACKING/REACTION TIME

BE 5/5 IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E222823

SCALE 1/1 SHEET 1 OF 1

REV E ER47E222823 SHT E



VENDOR NOTES:

A. MASTER SPECIALTIES CO., COSTA MESA, CALIF.
B. CONTROLS CO. OF AMERICA, FOLCROFT, PA.
C. TEMPO INSTRUMENT INC., PLAINVIEW, N.Y. (SIMILAR TO SERIES 888)
D. OAK MFG. CORP., CRYSTAL LAKE, ILL.
E. MONSANTO CC., ELEC. SPEC. PROD., CUPERTINO, CALIF.
F. AMP CORP., HARRISBURG, PA.
G. THE BIRTCHER CORP., MONTEREY PARK, CALIF.
H. BENDIX, ELEC. COMP. DIV., SIDNEY, N.Y.
J. TEMPO INSTRUMENT INC., PLAINVIEW, N.Y., (SIMILAR TO SERIES 60 SOLID STATE SEQUENTIAL PROGRAMMER)

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255 SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391 SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287 MODULARITY GUIDELINES.
70 SD 5243 SAFETY DESIGN REQUIREMENTS.
70 SD 5395 HUMAN ENGINEERING REQUIREMENTS.

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47D222824G1	47E220698G1
PART NO.	NEXT ASSY

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED

PRELIMINARY

NOTES:-

1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664
2. MARK GE 47D222824 GROUP NO. OR PT. NO. AS APPLICABLE PER 118A1526, CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

QTY	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
2	90EA1C4F3J2WL2N1	31	SWITCH, PUSHBUTTON, ILLUM	A
1	MS25256-10	30	LIGHT-WHT	
2	MS25237-327	29	LAMP	
1	LJT07RE-13-35P	28	CONNECTOR	H
1	LJT07RE-9-6P	27	CONNECTOR	H
2	47D222824P26	26	LOAD PROGRAMMER	J
X	47D222800	25	DIAGRAM, SIGNAL FLOW	
22	17B-7-1	24	RETAINER, PCB	G
11	202932-2	23	CONNECTOR	F
11	202933-2	22	CONNECTOR	F
2	47D222824P21	21	DISPLAY CONTROL	
2	P20	20	LOAD PROGRAMMER CONTROL	
1	P19	19	SERVO COMP	
1	P18	18	LOAD	
3	P17	17	POWER CONDITIONER	
1	P16	16	CONTROL SELECT	
1	47D222824P15	15	MODE SELECTOR	
3	W9601-B	14	SWITCH, PUSHBUTTON	B
6	MAN-1	13	DISPLAY, ALPHA-NUMERIC	E
3	MS91528-0K1B	12	KNOB	
2	399609L	11	SWITCH, ROTARY	D
1	399223A	10	SWITCH, ROTARY	D
1	47D222824P9	9	TIMER	C
1	W9601-B	8	SWITCH, PUSHBUTTON	B
2	MS25256-6	7	LIGHT-RED	
4	90E505	6	BARRIER	A
1	90EA1C4F3J1WLIN1	5	SWITCH, PUSHBUTTON, ILLUM	A
1	47E222826G14	4	COVER, BOTTOM	
1	47E222826G10	3	COVER, TOP	
1	47E222826G2	2	MODULE	
X	47D222824G1	1	ASSEMBLY, CONTROLLER	

LIST OF MATERIAL

G4	G3	G2	G1
REQUIREMENTS PER ASS'Y.			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	26	10	70
CHECKED	28	10	70
ENGR APPROVED	10	11	70
MFG	3	11	70
QUALITY	30	10	70
R.S. DESIGN	30	10	70
PROJECT	20	10	70
CONTRACT	4	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

MODULE, ASSY OF ERGOMETER CONTROL SE S/S IMBLMS B4

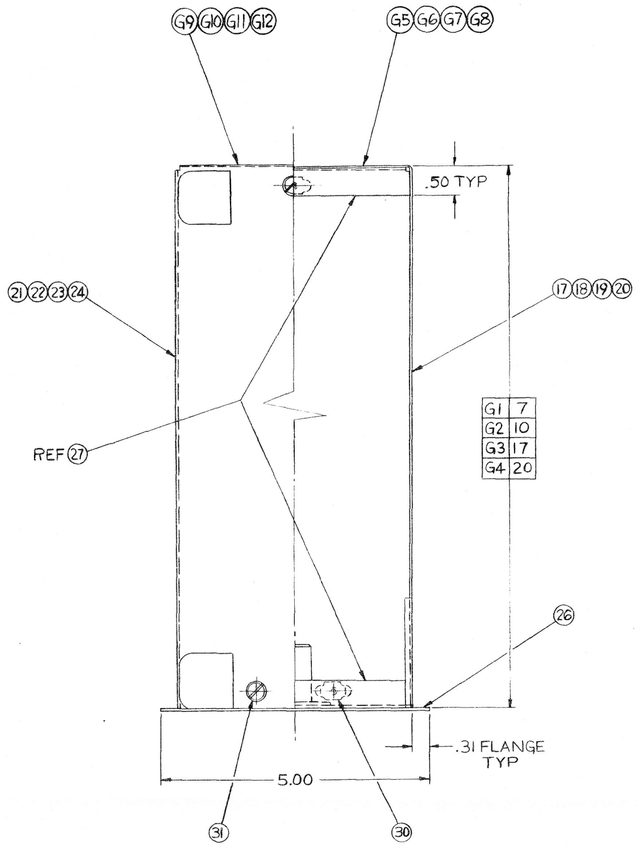
SIZE	CODE IDENT NO.	
D	23991	ER47D222824

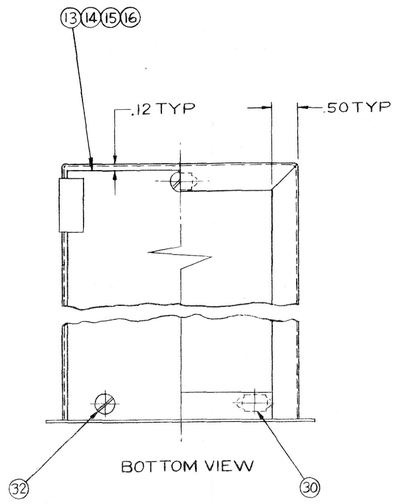
SCALE 1/1 SHEET 1 OF 1

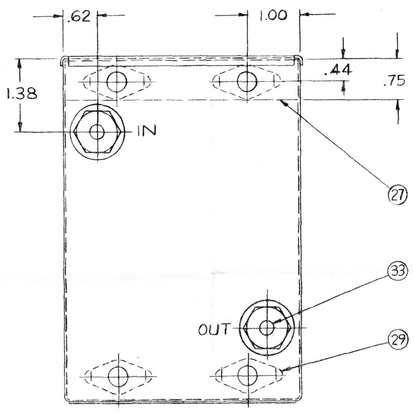
SIZE D ER47D222824 REV

PRINTED IN U.S.A.

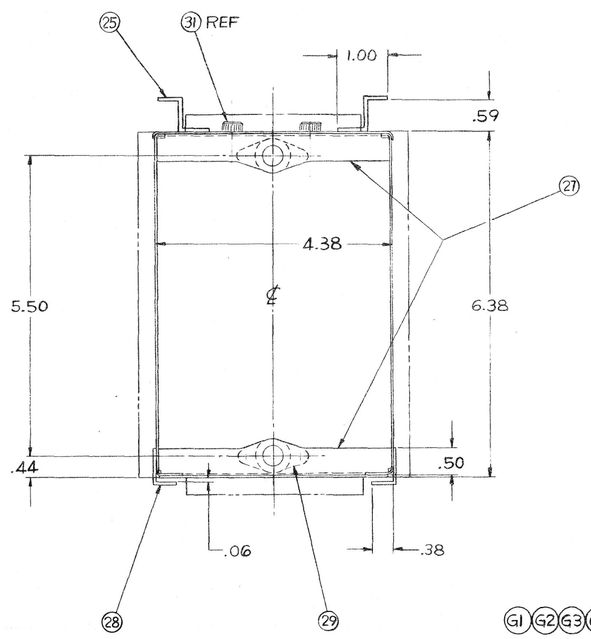
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

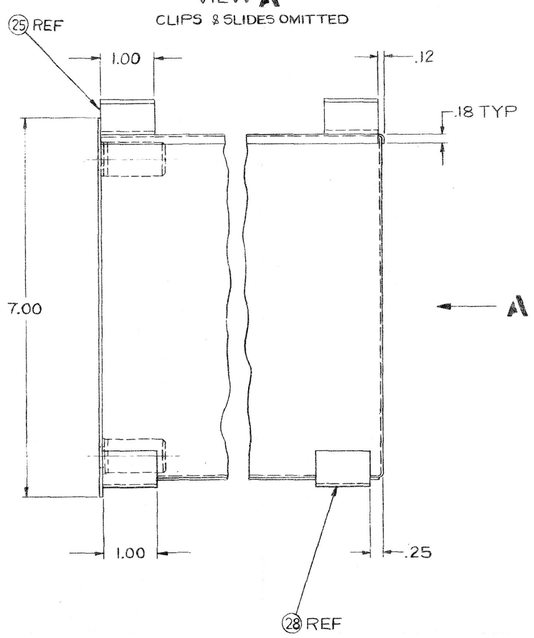






VIEW A
CLIPS & SLIDES OMITTED





NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222825 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526 CL. 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. FINISH PER FEDERAL STD. 595, COLOR:

VENDOR NOTES:
A. SPACE-LOK INC. BURBANK, CALIF.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

G12	G11	G10	G9	G8	G7	G6	G5	G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
									2	2	2	47E222825P33	33	COOLANT LINE	
									3	3	3	47E222825P32	32	SCREW, CAPTIVE	
									3	3	3	47E222825P31	31	SCREW, CAPTIVE	
					6	6	6	6				165A4230P4	30	DOME NUTPLATE, MINIATURE	
					6	6	6	6				SLR3CD.040	29	INSERT, QUICK RELEASE	A
					4	4	4	4				47E222825P28	28	SLIDE	
					3	3	3	3				P27	27	ANGLE	
									1	1	1	P26	26	PANEL	
4	4	4	4									P25	25	CLIP	
1												P24	24	COVER, TOP	
	1											P23	23		
		1										P22	22		
			1									P21	21	COVER, TOP	
				1								P20	20	FRAME	
					1							P19	19		
						1						P18	18		
							1					P17	17	FRAME	
								1				P16	16	COVER, BOTTOM	4
												P15	15		4
												P14	14		4
												P13	13	COVER, BOTTOM	4
X												G12	12	COVER ASSEMBLY, TOP	4
	X											G11	11		4
		X										G10	10		4
			X									G9	9	COVER ASSEMBLY, TOP	4
				X					1			G8	8	FRAME ASSEMBLY	
					X					1		G7	7		
						X					1	G6	6		
							X				1	G5	5	FRAME ASSEMBLY	
								X				G4	4	MODULE FRAME ASSEMBLY	4
									X			G3	3		4
										X		G2	2		4
											X	47E222825G1	1	MODULE FRAME ASSEMBLY	4

REQUIREMENTS PER ASS'Y — LIST OF MATERIAL

47E222825 G4
G3
G2
47E222825 G1
DWG NO.

MULTI-USAGE
NEXT ASS'Y

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES — TOLERANCES ON: 2 PLACE DECIMALS ± .01; 3 PLACE DECIMALS ± .005; ANGLES ±; FRACTIONS ±; MATERIAL — ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN Ed Cimaras	21	10	70
CHECKED Hu Hall	28	11	70
ENGR PCB	21	11	70
ENGR	17	11	70
	4	11	70
	17	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DIV. LOC PHILA. PA.

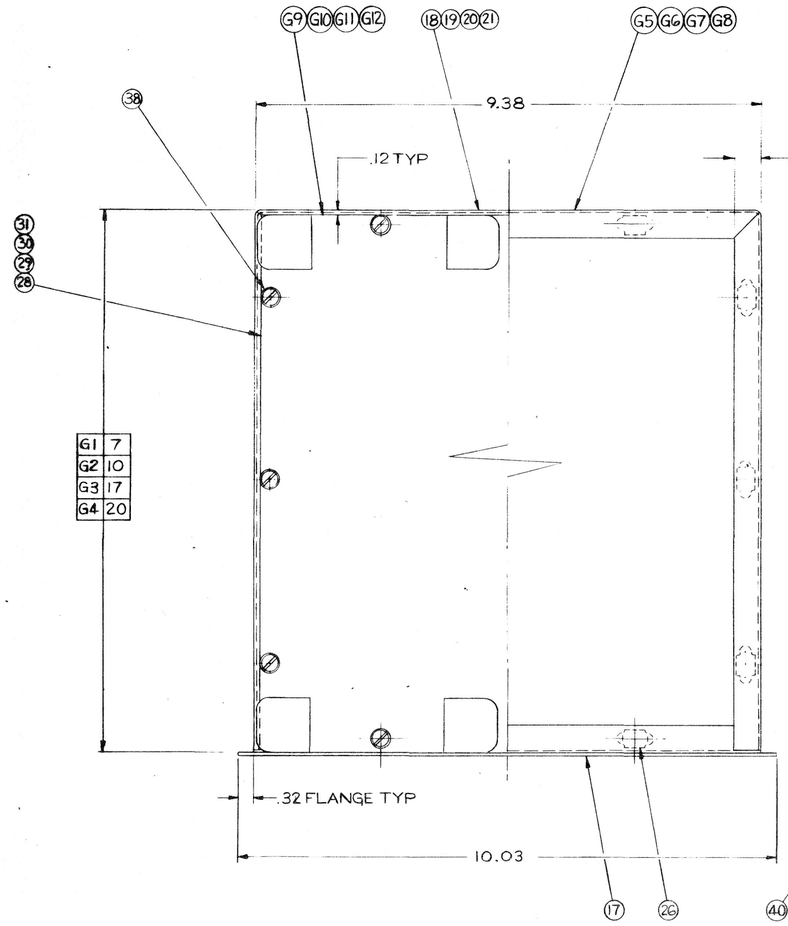
MODULE FRAME ASSEMBLY IMBLMS B4

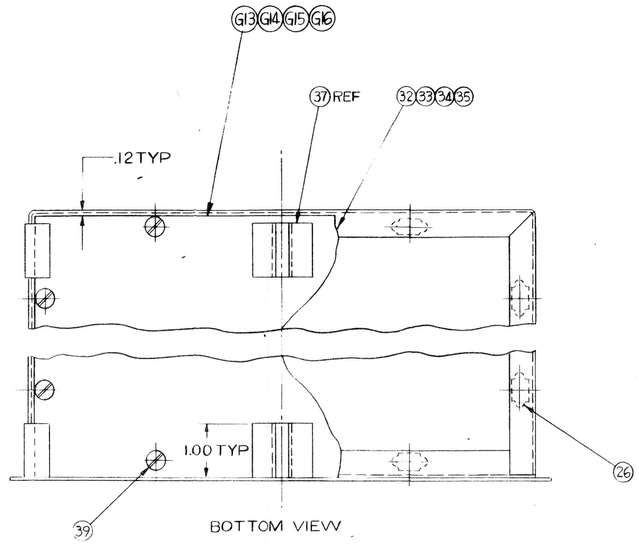
SIZE	CODE IDENT NO.	
E	23991	ER47E222825

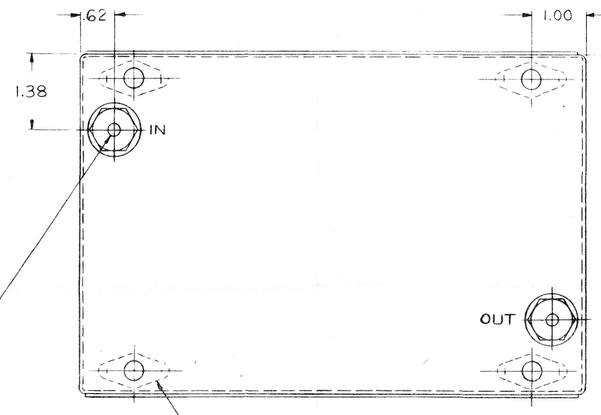
SCALE NONE — SHEET 1 OF 1

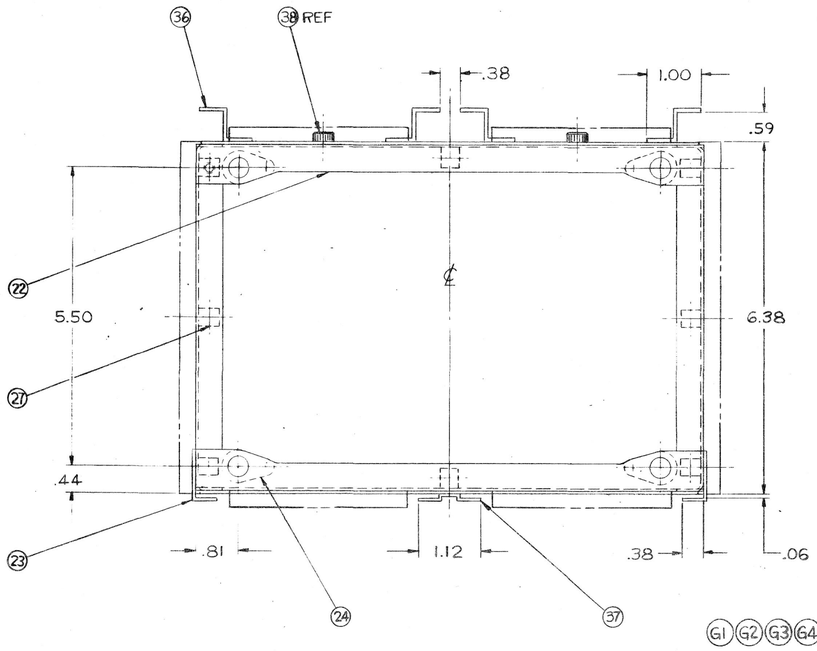
REV E ER47E222825
REV E ER47E222825

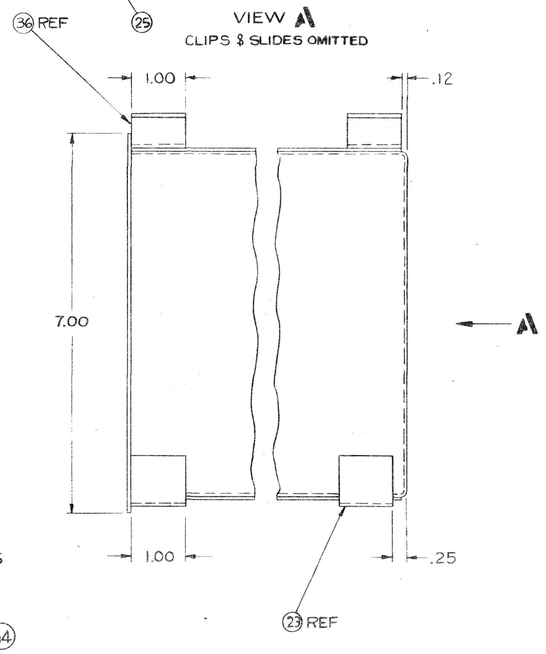
REVISIONS			
ZONE	LTR	DESCRIPTION	DATE / APPROVED











NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222826 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526, CL. 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. FINISH PER FEDERAL STD. 595. COLOR:

PRELIMINARY

VENDOR NOTES:
A. SPACE-LOK INC. BURBANK, CALIF.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

G16	G15	G14	G13	G12	G11	G10	G9	G8	G7	G6	G5	G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASS'Y																			
														2	2	2	47E222826P40	40	COOLANT LINE	
10	10	10	10													P39	39	SCREW, CAPTIVE	
						10	10	10	10							P38	38	SCREW, CAPTIVE	
2	2	2	2													P37	37	CLIP, BOTTOM	
						8	8	8	8							P36	36	CLIP, TOP	
1																P35	35	COVER, BOTTOM	
	1															P34	34	↕	
		1														P33	33		
			1													P32	32	COVER, BOTTOM	
				1												P31	31	COVER, TOP	
					1											P30	30	↕	
						1										P29	29		
							1									47E222826P28	28	COVER, TOP	
								8	8	8	8					118A1684P13	27	NUTPLATE 90°	
								20	20	20	20					165A4230P4	26	DOME NUTPLATE MINIATURE	
								4	4	4	4					SLR3CD.040	25	INSERT QUICK RELEASE	A
								4	4	4	4					47E222826P24	24	INSERT QUICK RELEASE, SPECIAL	
								4	4	4	4					P23	23	SLIDE	
								2	2	2	2					P22	22	ANGLE	
								1								P21	21	FRAME	
									1							P20	20	↕	
										1						P19	19		
											1					P18	18	FRAME	
												1	1	1	1	P17	17	PANEL	
X																G16	16	COVER ASSEMBLY, BOTTOM	4
	X															G15	15	↕	4
		X														G14	14		4
			X													G13	13	COVER ASSEMBLY, BOTTOM	4
				X												G12	12	COVER ASSEMBLY, TOP	4
					X											G11	11	↕	4
						X										G10	10		4
							X									G9	9	COVER ASSEMBLY, TOP	4
								X				1				G8	8	FRAME ASSEMBLY	
									X				1			G7	7	↕	
										X				1		G6	6		
											X				1	G5	5	FRAME ASSEMBLY	
												X				G4	4	MODULE FRAME ASSEMBLY	4
													X			G3	3	↕	4
														X		G2	2		4
															X	47E222826G1	1	MODULE FRAME ASSEMBLY	4

LIST OF MATERIAL

47E222826 G4
G3
G2
47E222826G1
DWG NO. NEXT ASS'Y

MULTI-USAGE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	12	10	70
CHECKED	12	11	70
ENGR APPD	12	11	70
MFG APPD	12	11	70
QUALITY	12	11	70
PROJECT ENGR	12	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DIV. LOC. PHILA. PA.

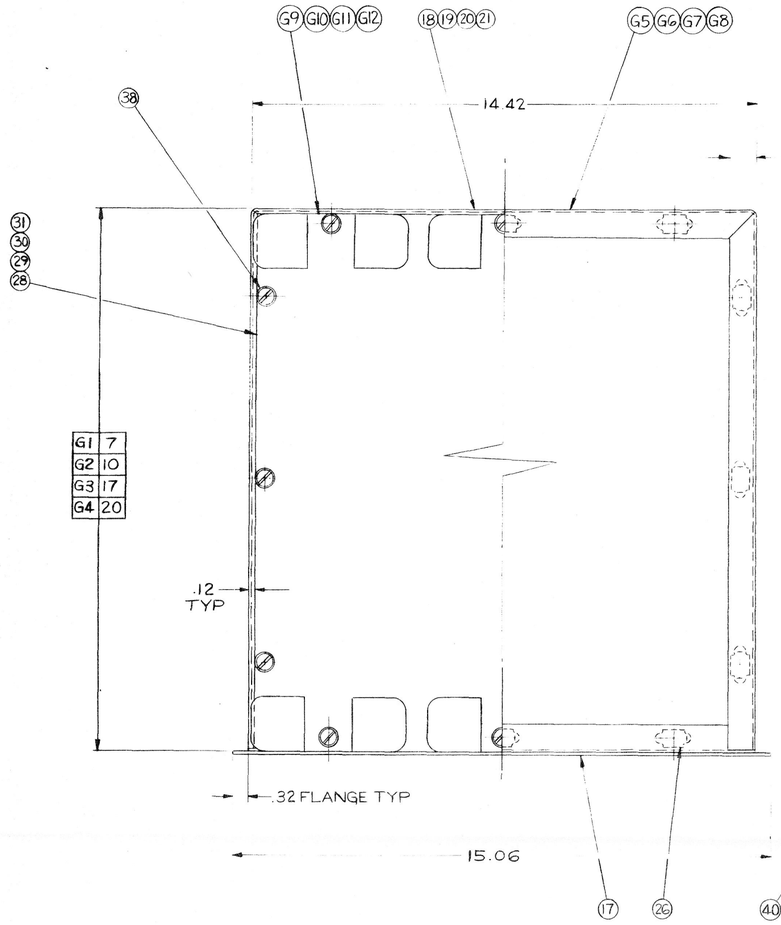
MODULE FRAME ASSEMBLY IMBLMS B4

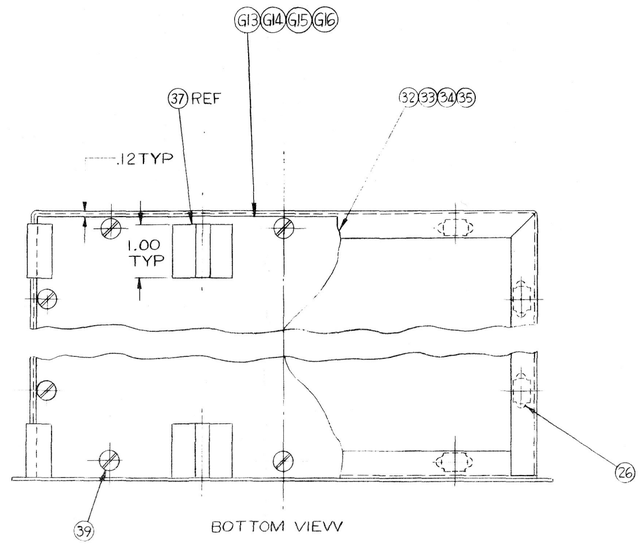
SIZE	CODE IDENT NO.	
E	23991	ER47E222826

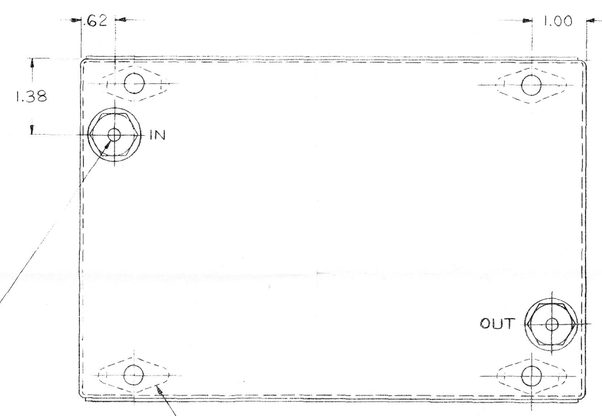
SCALE NONE SHEET 1 OF 2

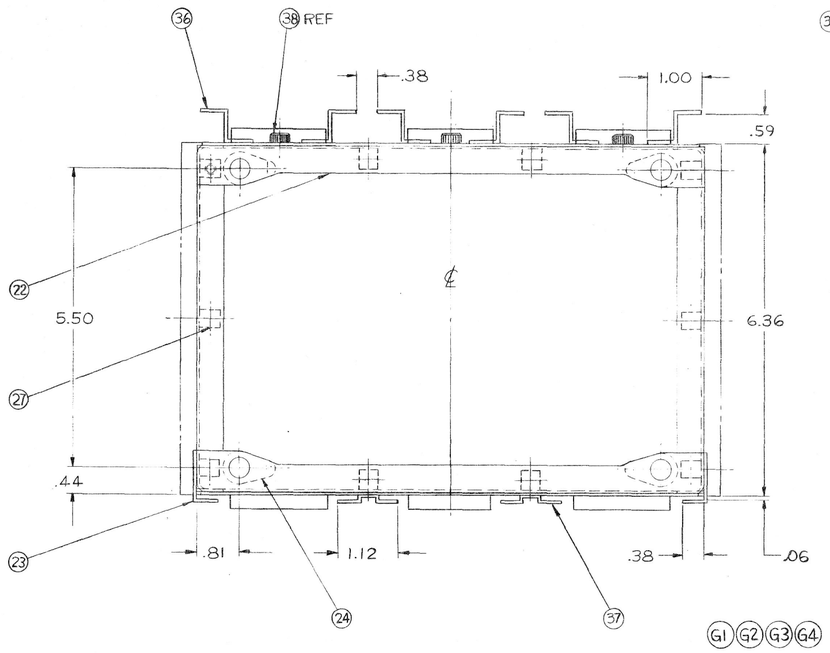
USED ON ER47E222826 REV
USED ON ER47E222826 REV

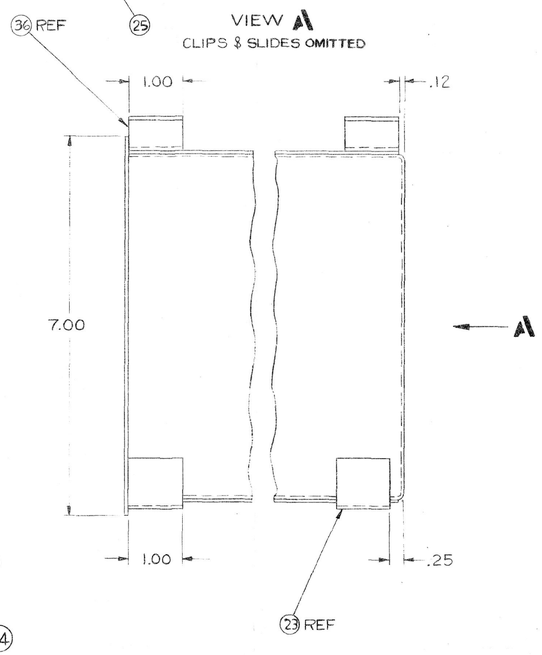
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED











NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222827 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526, CL. 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. FINISH PER FEDERAL STD. 595. COLOR:

PRELIMINARY

VENDOR NOTES:
A. SPACE-LOK INC. BURBANK, CALIF.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

G16	G15	G14	G13	G12	G11	G10	G9	G8	G7	G6	G5	G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASS'Y																			
														2	2	2	47E222827P40	40	COOLANT LINE	
12	12	12	12														P39	39	SCREW, CAPTIVE	
				12	12	12	12										P38	38	SCREW, CAPTIVE	
4	4	4	4														P37	37	CLIP, BOTTOM	
				12	12	12	12										P36	36	CLIP, TOP	
1																	P35	35	COVER, BOTTOM	
	1																P34	34	↕	
		1															P33	33		
			1														P32	32	COVER, BOTTOM	
				1													P31	31	COVER, TOP	
					1												P30	30	↕	
						1											P29	29		
							1										47E222827P28	28	COVER, TOP	
								10	10	10	10						118A1684-P13	27	NUTPLATE 90°	
								24	24	24	24						165A4230P4	26	DOME NUTPLATE MINIATURE	
								4	4	4	4						SLR3CD.040	25	INSERT QUICK RELEASE	A
								4	4	4	4						47E222827P24	24	INSERT QUICK RELEASE, SPECIAL	
								4	4	4	4						P23	23	SLIDE	
								2	2	2	2						P22	22	ANGLE	
								1									P21	21	FRAME	
									1								P20	20	↕	
										1							P19	19		
											1						P18	18	FRAME	
														1	1	1	P17	17	PANEL	
X																	G16	16	COVER ASSEMBLY, BOTTOM	4
	X																G15	15		4
		X															G14	14	↕	4
			X														G13	13	COVER ASSEMBLY, BOTTOM	4
				X													G12	12	COVER ASSEMBLY, TOP	4
					X												G11	11	↕	4
						X											G10	10		4
							X										G9	9	COVER ASSEMBLY, TOP	4
								X				1					G8	8	FRAME ASSEMBLY	
									X				1				G7	7	↕	
										X				1			G6	6		
											X				1		G5	5	FRAME ASSEMBLY	
												X				1	G4	4	MODULE FRAME ASSEMBLY	4
													X				G3	3	↕	4
														X			G2	2		4
															X		47E222827G1	1	MODULE FRAME ASSEMBLY	4

LIST OF MATERIAL

47E222827G4			
	G3	MULTI-USAGE	
	G2		
47E222827G1			
DWG NO.	NEXT ASS'Y		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ±; 3-PLACE DECIMALS ±; ANGLES °; FRACTIONS ±; MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	-	3	70
CHECKED	11	11	70
ENGR MGR	21	11	70
ENGRG	12	11	70
	24	11	70
	17	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT LOC PHILA. PA.

MODULE FRAME ASSEMBLY IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E222827

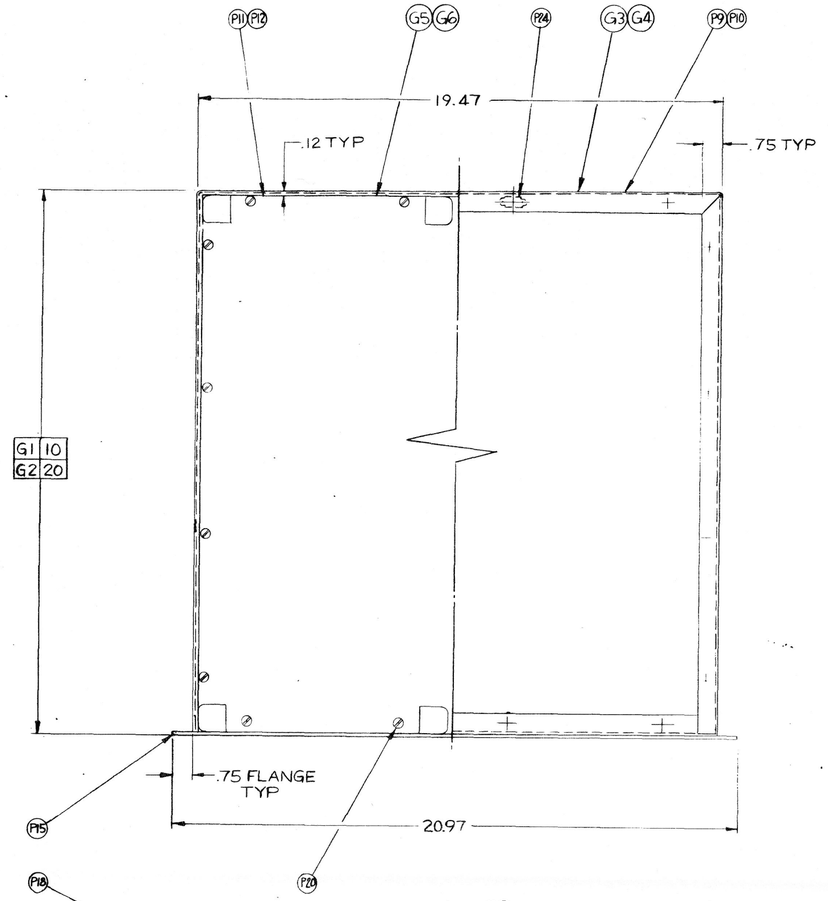
SCALE NONE SHEET 1 OF 1

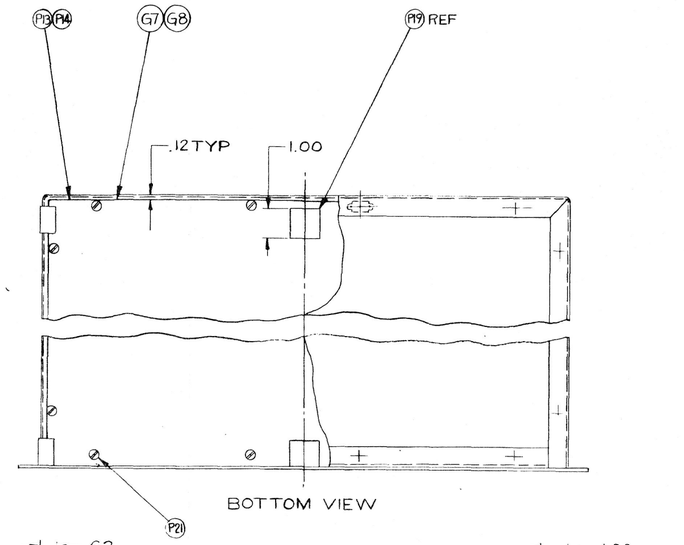
REV E ER47E222827

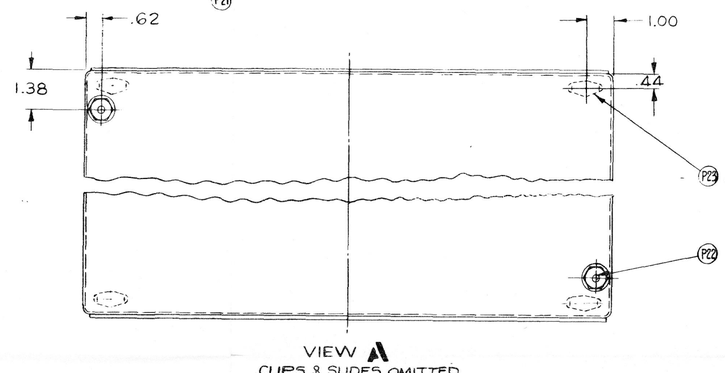
REV E ER47E222827

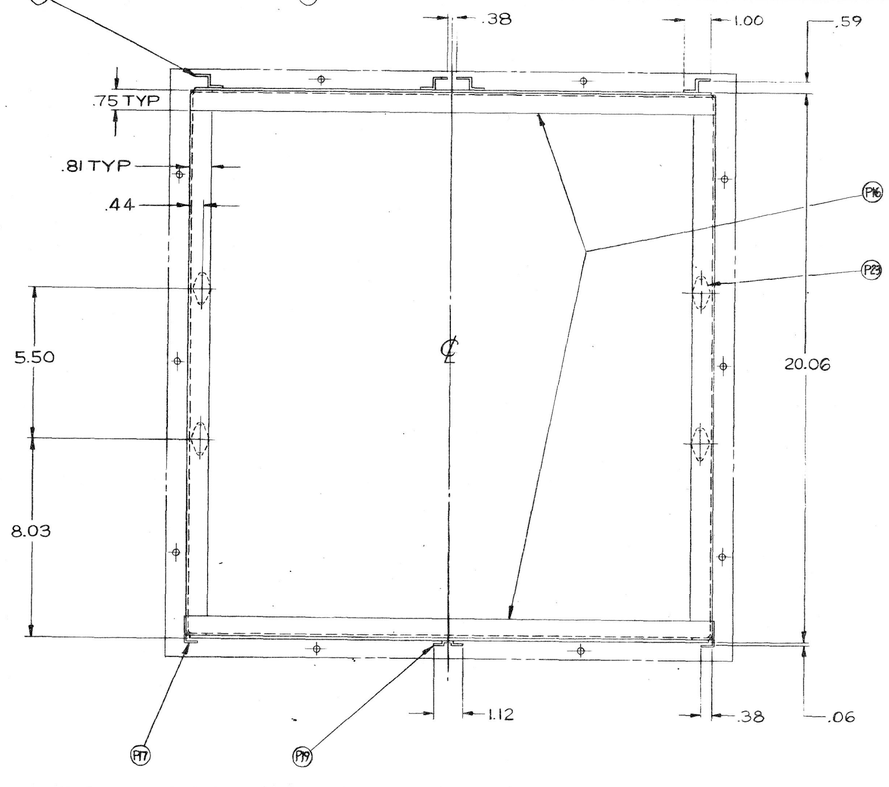
REV E ER47E222827

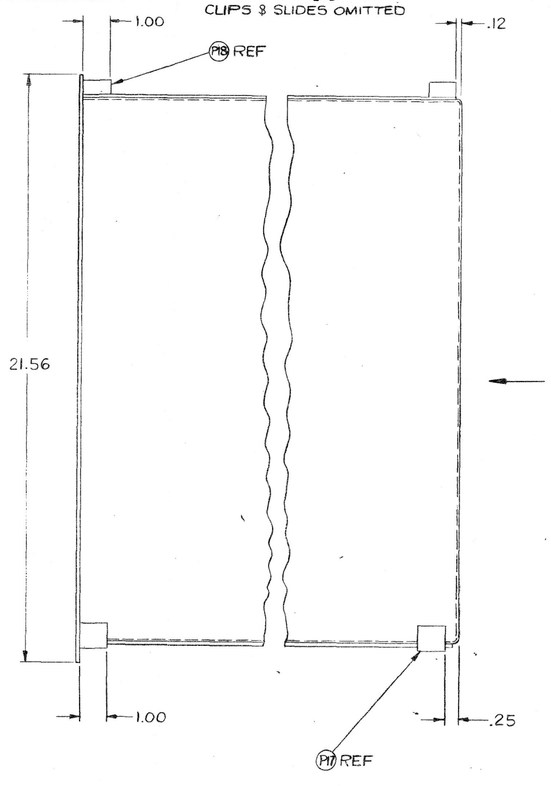
PRINTED IN U.S.A.











G1 G2

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222828 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. FINISH PER FEDERAL STD. 595, COLOR:

VENDOR NOTES:
A. SPACE-LOK INC., BURBANK, CALIF.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

G8	G7	G6	G5	G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
				32	32			165A4230P4	24	DOME NUTPLATE, MINIATURE	
				8	8			SLR3CD.040	23	INSERT, QUICK RELEASE	A
						2	2	47E222828P22	22	COOLANT LINE	
16	16							P21	21	SCREW, CAPTIVE	
		16	16					P20	20	SCREW, CAPTIVE	
2	2							P19	19	CLIP, BOTTOM	
		8	8					P18	18	CLIP, TOP	
				4	4			P17	17	SLIDE	
				2	2			P16	16	ANGLE	
						1	1	P15	15	PANEL	
1								P14	14	COVER, BOTTOM	
	1							P13	13	COVER, BOTTOM	
		1						P12	12	COVER, TOP	
			1					P11	11	COVER, TOP	
				1				P10	10	FRAME	
					1			P9	9	FRAME	
X								G8	8	COVER ASSEMBLY, BOTTOM	4
	X							G7	7	COVER ASSEMBLY, BOTTOM	4
		X						G6	6	COVER ASSEMBLY, TOP	4
			X					G5	5	COVER ASSEMBLY, TOP	4
				X		1		G4	4	FRAME ASSEMBLY	
					X		1	G3	3	FRAME ASSEMBLY	
						X		G2	2	MODULE FRAME ASSEMBLY	4
							X	47E222828G1	1	MODULE FRAME ASSEMBLY	4

REQUIREMENTS PER ASSY

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	23	10	70
CHECKED	11	11	70
ENGR RELEASE	21	11	70
ENGR	13	11	70
	12	11	70
	13	11	70

GENERAL ELECTRIC
SPACE SYSTEMS ORGN LOC PHILA. PA.

MODULE FRAME ASSEMBLY IMBLMS B4

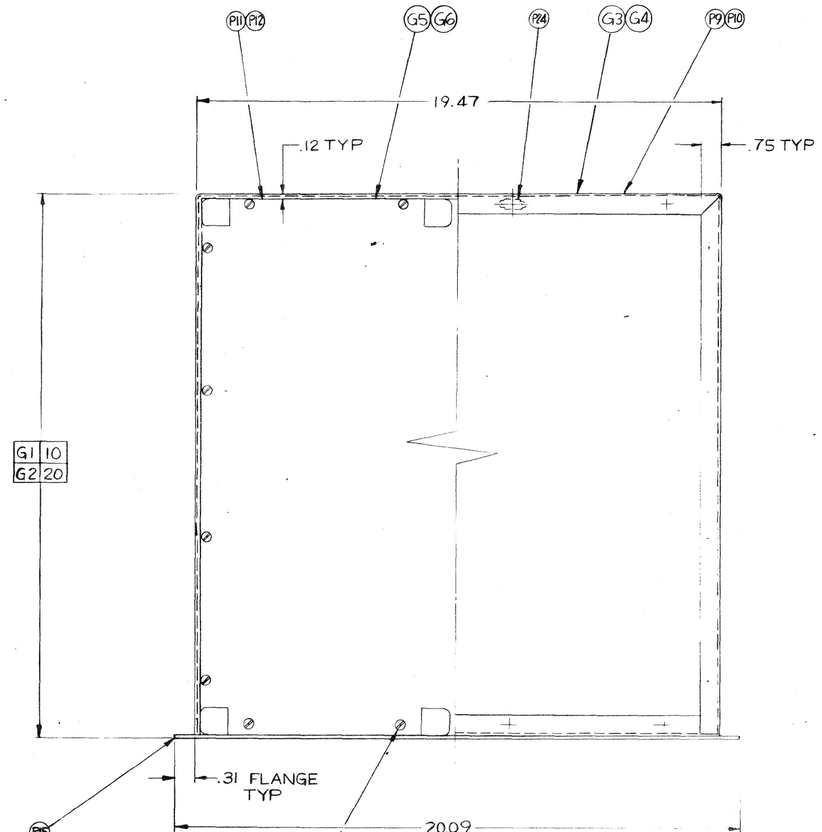
SIZE	CODE IDENT NO.	
E	23991	ER47E222828

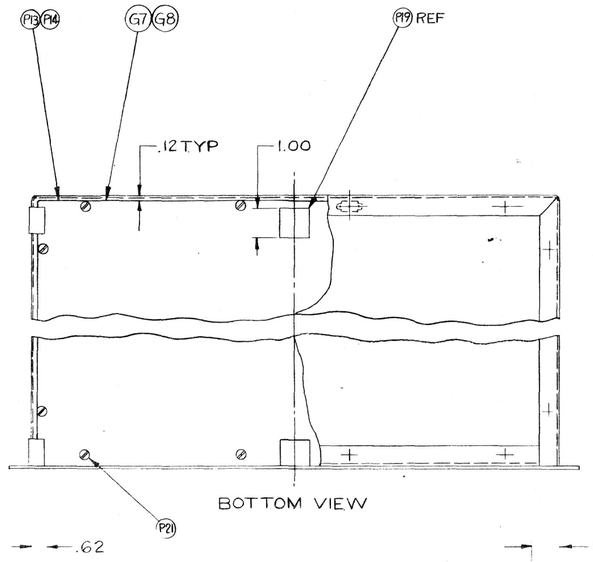
SCALE NONE SHEET 1 OF 1

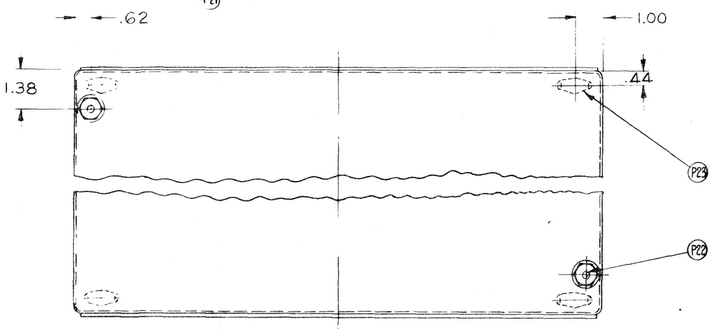
47E222828G2	MULTI-USAGE
47E222828G1	
DWG NO.	NEXT ASSY

ER47E222828 REV E

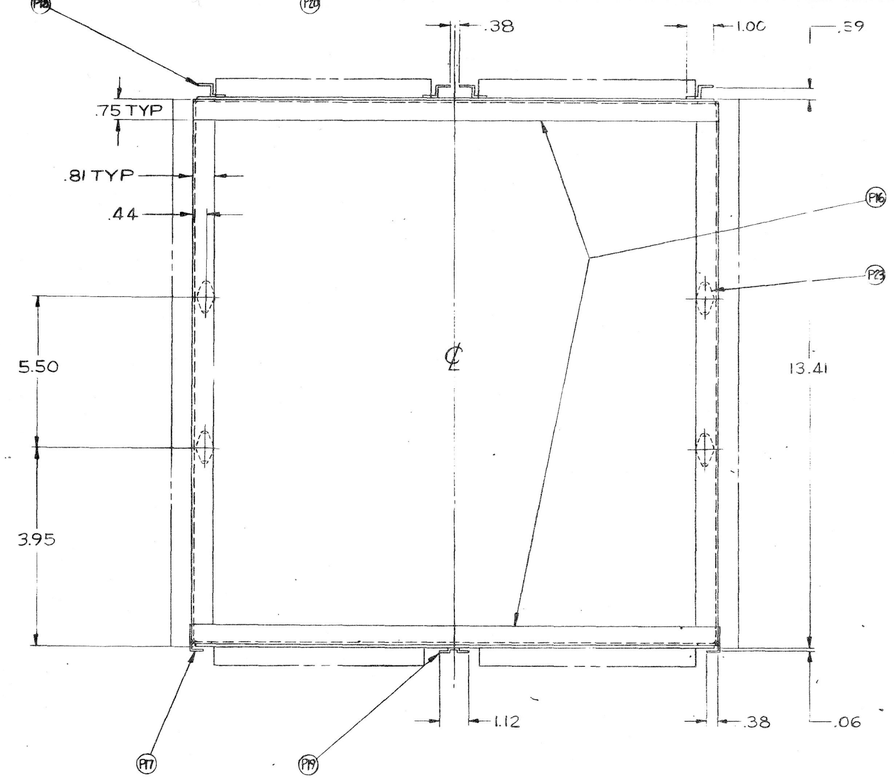
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

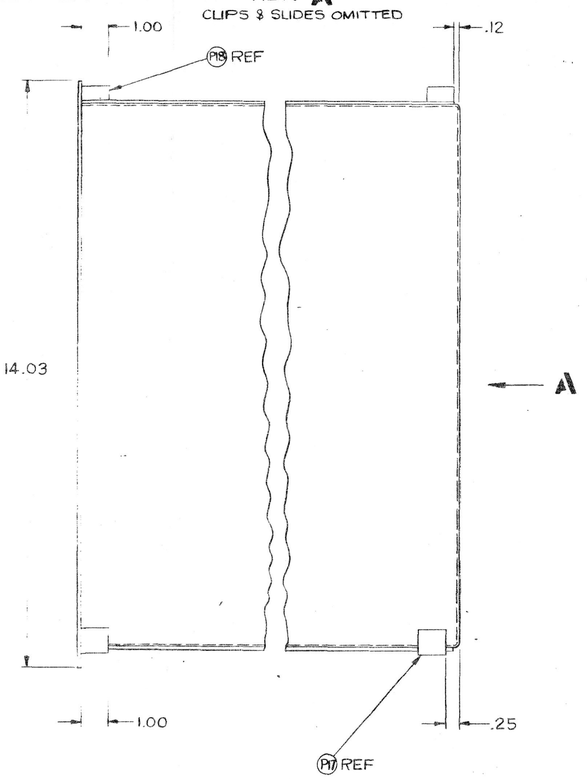






VIEW A
CLIPS & SLIDES OMITTED





NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222829 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. FINISH PER FEDERAL STD. 595, COLOR:

A. VENDOR NOTES:
SPACE-LOK INC.,
BURBANK, CALIF.

PRELIMINARY

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

G8	G7	G6	G5	G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
				32	32			165A4230P4	24	DOME NUTPLATE, MINIATURE	
				8	8			SLR3CD.040	23	INSERT, QUICK RELEASE	A
						2	2	47E222829P22	22	COOLANT LINE	
16	16							P21	21	SCREW, CAPTIVE	
		16	16					P20	20	SCREW, CAPTIVE	
2	2							P19	19	CLIP, BOTTOM	
		8	8					P18	18	CLIP, TOP	
				4	4			P17	17	SLIDE	
				2	2			P16	16	ANGLE	
						1	1	P15	15	PANEL	
1								P14	14	COVER, BOTTOM	
	1							P13	13	COVER, BOTTOM	
		1						P12	12	COVER, TOP	
			1					P11	11	COVER, TOP	
				1				P10	10	FRAME	
					1			P9	9	FRAME	
X								G8	8	COVER ASSEMBLY, BOTTOM	4
	X							G7	7	COVER ASSEMBLY, BOTTOM	4
		X						G6	6	COVER ASSEMBLY, TOP	4
			X					G5	5	COVER ASSEMBLY, TOP	4
				X		1		G4	4	FRAME ASSEMBLY	
					X		1	G3	3	FRAME ASSEMBLY	
						X		G2	2	MODULE FRAME ASSEMBLY	4
							X	47E222829G1	1	MODULE FRAME ASSEMBLY	4

REQUIREMENTS PER ASSY — LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL DORF ✓

SIGNATURES	DAY	MO	YR
DRAWN R.B. Cameron	23	10	70
CHECKED H.W. Hill	11	11	70
RELEASED MFG PERS	21	11	70
ENGRG F. Sly	13	11	70
[illegible] D.Metzel	20	11	70
[illegible] R.D.Mullens	19	11	70

GENERAL ELECTRIC
SPACE SYSTEMS ORG. LOC PHILA. PA.

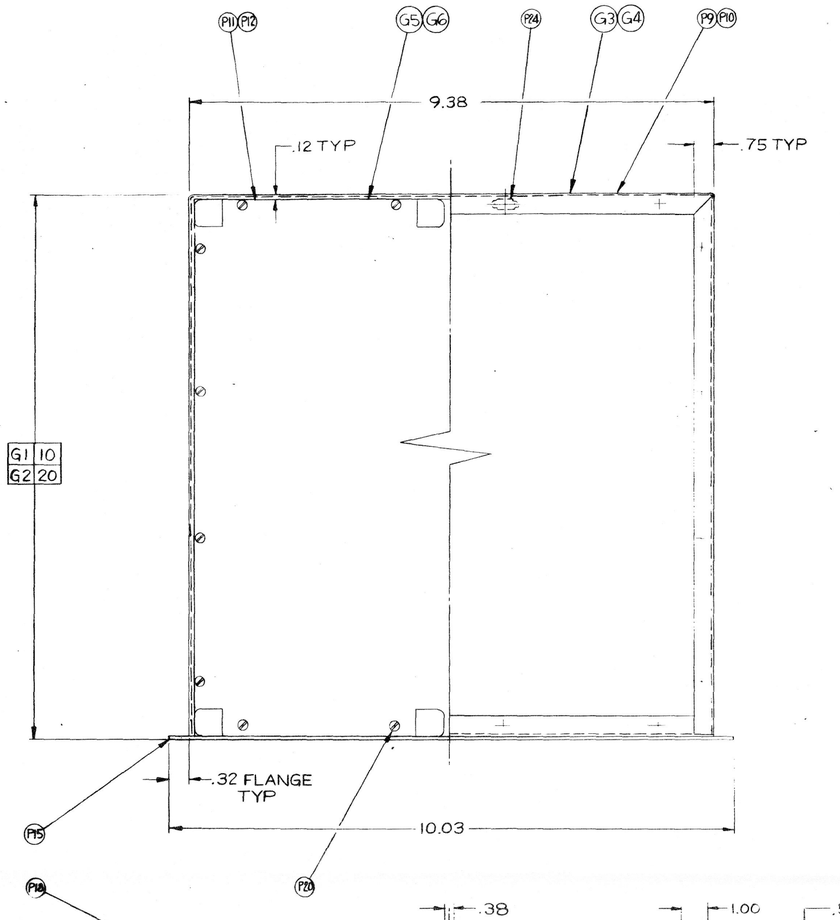
MODULE FRAME ASSEMBLY IMBLMS B4

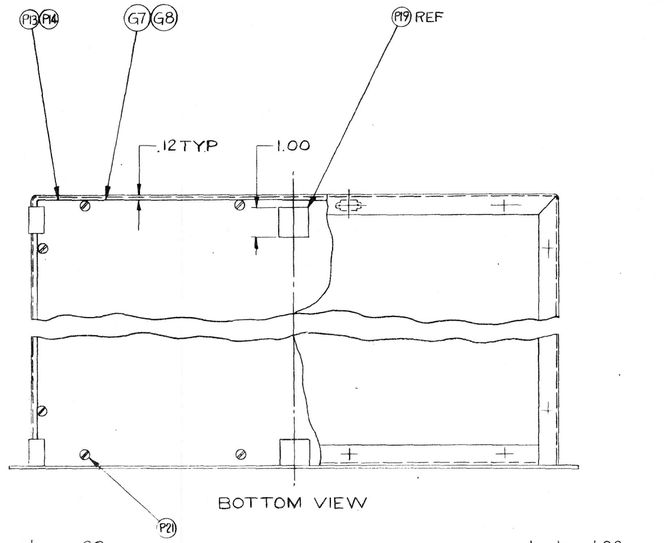
SIZE	CODE IDENT NO.	
E	23991	ER47E222829

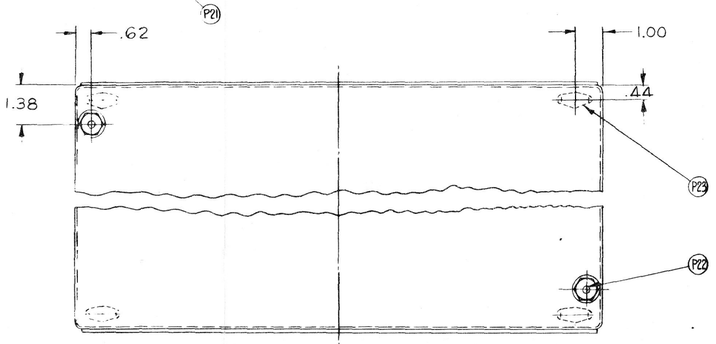
SCALE NONE — SHEET 1 OF 1

47E222829G2	MULTI-USAGE
47E222829G1	
DWG NO.	NEXT ASSY

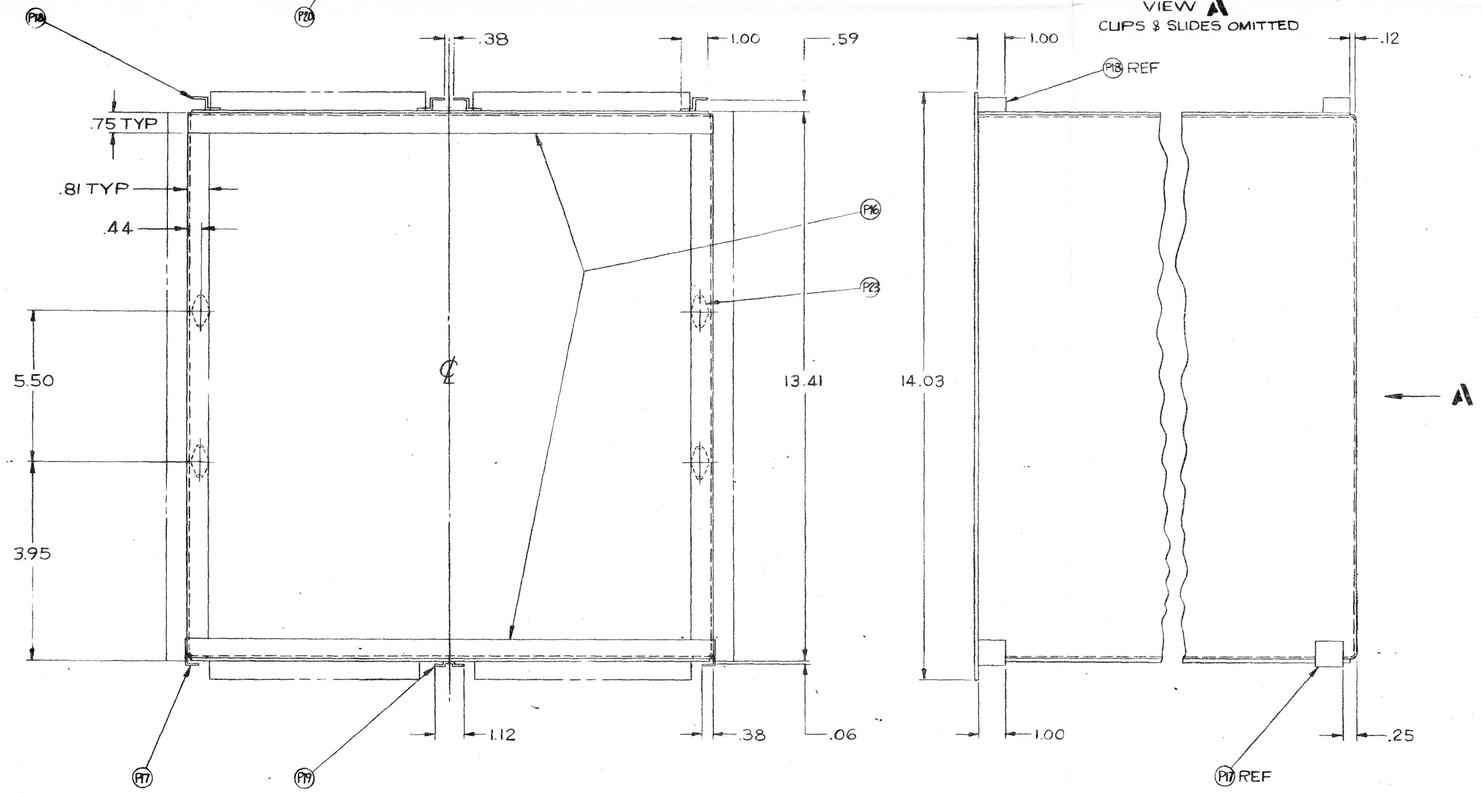
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED







VIEW A
CLIPS & SLIDES OMITTED



NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222830 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. FINISH PER FEDERAL STD. 595, COLOR:

VENDOR NOTES:
A. SPACE-LOK INC., BURBANK, CALIF.

PRELIMINARY

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

G8	G7	G6	G5	G4	G3	G2	G1	REQUIREMENTS PER ASSY	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
				32	32				165A4230P4	24	DOME NUTPLATE, MINIATURE	
				8	8				5LR3CD.040	23	INSERT, QUICK RELEASE	A
						2	2		47E222830P22	22	COOLANT LINE	
16	16								P21	21	SCREW, CAPTIVE	
		16	16						P20	20	SCREW, CAPTIVE	
2	2								P19	19	CLIP, BOTTOM	
		8	8						P18	18	CLIP, TOP	
				4	4				P17	17	SLIDE	
				2	2				P16	16	ANGLE	
						1	1		P15	15	PANEL	
1									P14	14	COVER, BOTTOM	
	1								P13	13	COVER, BOTTOM	
		1							P12	12	COVER, TOP	
			1						P11	11	COVER, TOP	
				1					P10	10	FRAME	
					1				P9	9	FRAME	
X									G8	8	COVER ASSEMBLY, BOTTOM	4
	X								G7	7	COVER ASSEMBLY, BOTTOM	4
		X							G6	6	COVER ASSEMBLY, TOP	4
			X						G5	5	COVER ASSEMBLY, TOP	4
				X	1				G4	4	FRAME ASSEMBLY	
					X	1			G3	3	FRAME ASSEMBLY	
						X			G2	2	MODULE FRAME ASSEMBLY	4
							X		47E222830G1	1	MODULE FRAME ASSEMBLY	4

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON:
2 PLACE DECIMALS ±
3 PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL –
ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN [illegible]	23	10	70
CHECKED [illegible]	11	11	70
RELEASED [illegible]	21	11	70
ENGRG [illegible]	15	11	70
[illegible]	24	11	70
[illegible]	19	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT. LOC PHILA. PA.

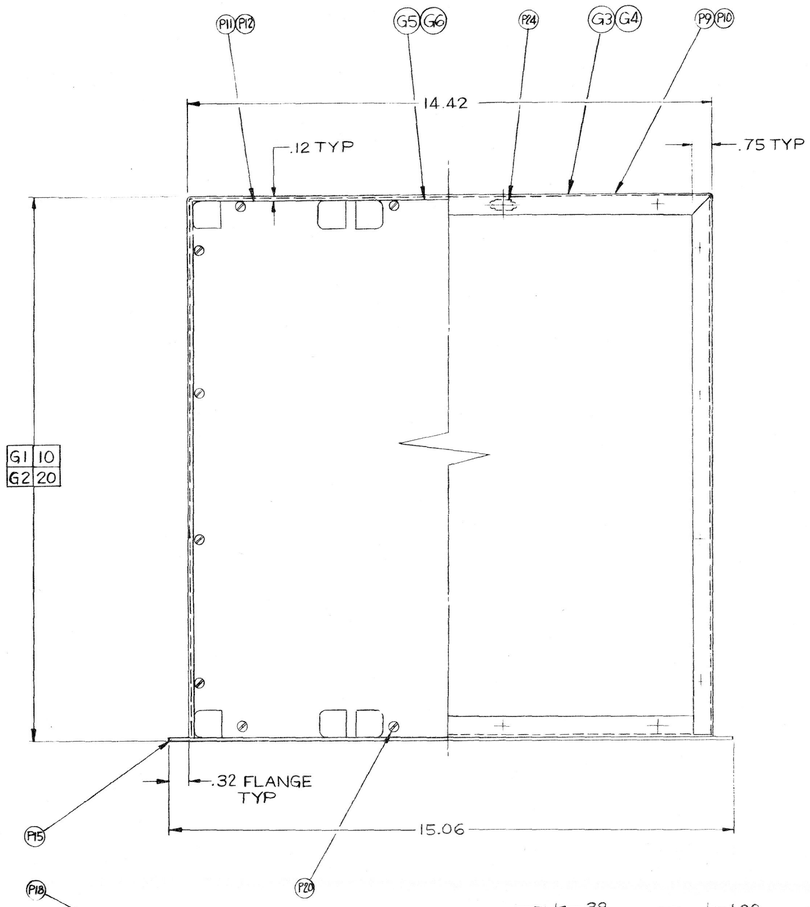
MODULE FRAME ASSEMBLY IMBLMS B4

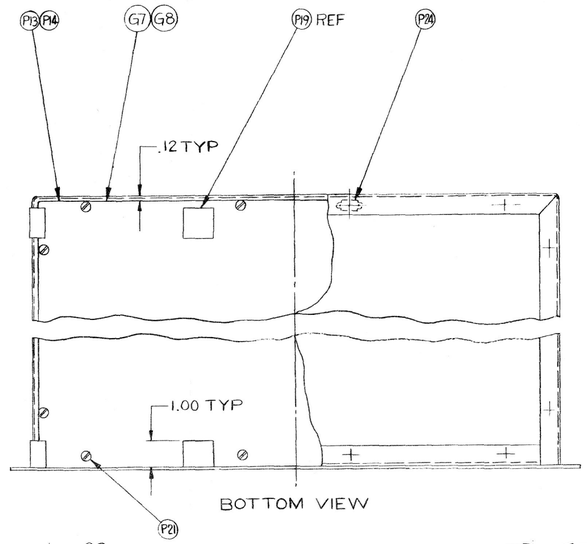
SIZE	CODE IDENT NO.	
E	23991	ER47E222830

SCALE NONE SHEET 1 OF 1

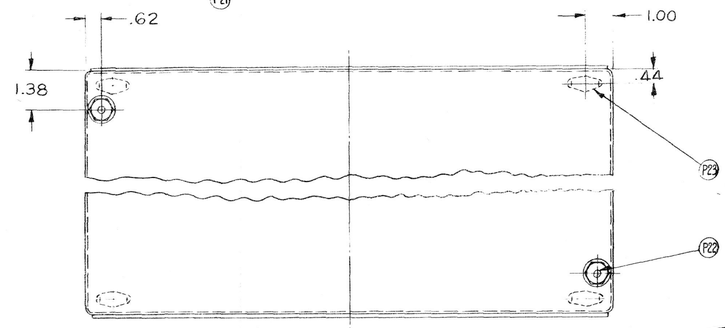
47E222830 G2	MULTI-USAGE
47E222830 G1	
DWG NO.	NEXT ASSY

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

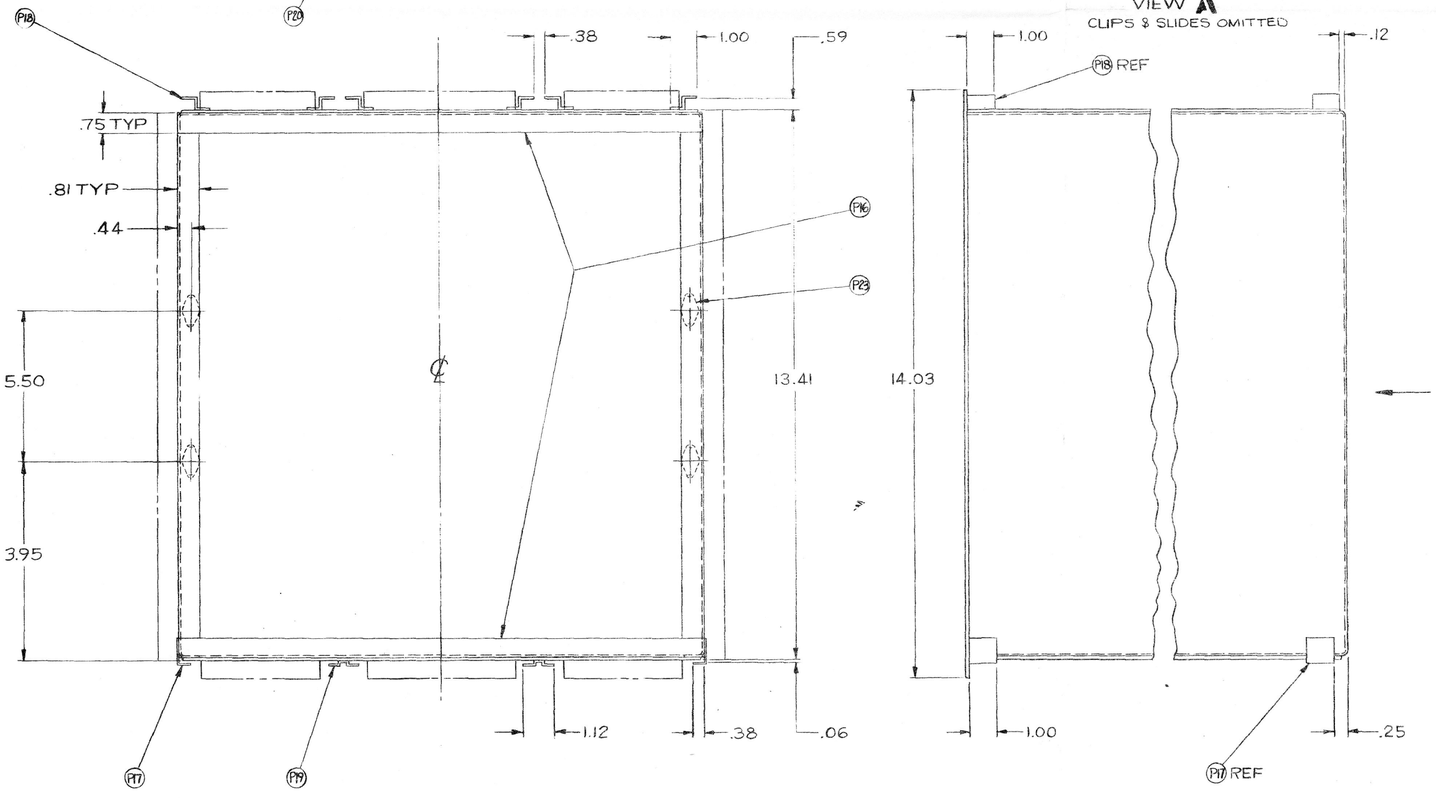




BOTTOM VIEW



VIEW A
CLIPS & SLIDES OMITTED



NOTES:
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222831 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.
4. FINISH PER FEDERAL STD. 595, COLOR:

VENDOR NOTES:
A. SPACE-LOK INC., BURBANK, CALIF.

PRELIMINARY

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

G8	G7	G6	G5	G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
				32	32			165A4230P4	24	DOME NUTPLATE, MINIATURE	
				8	8			SLR3CD.040	23	INSERT, QUICK RELEASE	A
						2	2	47E222831P22	22	COOLANT LINE	
16	16							P21	21	SCREW, CAPTIVE	
		16	16					P20	20	SCREW, CAPTIVE	
4	4							P19	19	CLIP, BOTTOM	
		12	12					P18	18	CLIP, TOP	
				4	4			P17	17	SLIDE	
				2	2			P16	16	ANGLE	
						1	1	P15	15	PANEL	
1								P14	14	COVER, BOTTOM	
	1							P13	13	COVER, BOTTOM	
		1						P12	12	COVER, TOP	
			1					P11	11	COVER, TOP	
				1				P10	10	FRAME	
					1			P9	9	FRAME	
X								G8	8	COVER ASSEMBLY, BOTTOM	4
	X							G7	7	COVER ASSEMBLY, BOTTOM	4
		X						G6	6	COVER ASSEMBLY, TOP	4
			X					G5	5	COVER ASSEMBLY, TOP	4
				X		1		G4	4	FRAME ASSEMBLY	
					X		1	G3	3	FRAME ASSEMBLY	
						X		G2	2	MODULE FRAME ASSEMBLY	4
							X	47E222831 G1	1	MODULE FRAME ASSEMBLY	4

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	23	10	70
CHECKED	11	11	70
ENGINEERING	21	11	70
LDG/RD	15	11	70
MFG	16	11	70
QUALITY	17	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT. LOC PHILA. PA.

MODULE FRAME ASSEMBLY IMBLMS B4

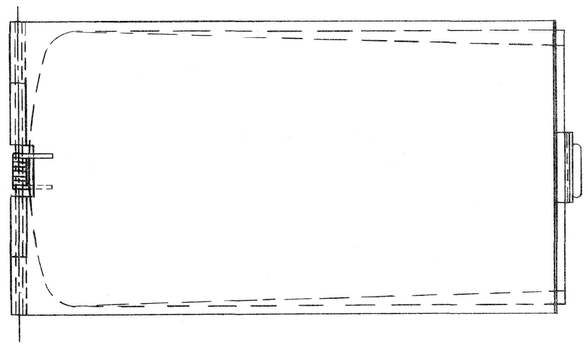
SIZE	CODE IDENT NO.	
E	23991	ER47E222831

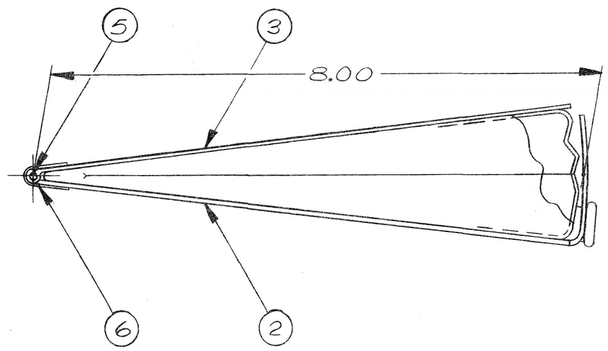
SCALE NONE — SHEET 1 OF 1

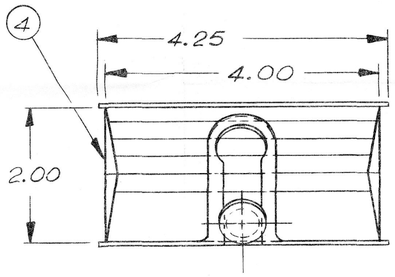
47E222831 G2	MULTI-USAGE
47E222831 G1	
DWG NO.	NEXT ASSY

REV E — ER47E222831 — DIST 16

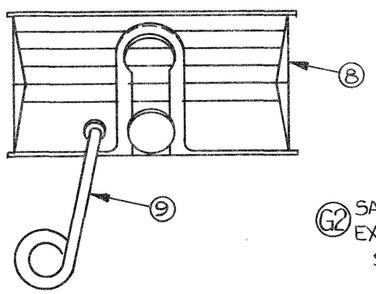
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED







G1



G2 SAME AS G1 EXCEPT AS SHOWN

NOTES:
1. PART TO CONFORM TO GE SPEC 70SD5250

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD5250	CLINICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5398	CLINICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s). N/A
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
			I	47D222836 P9	9	TUBE .190.D X .061.D. X 50.00 LG	
			I	P8	8	CONTAINER	
		X		G2	7	ASSEMBLY, DONOR-RECIPIENT	
			I /	P6	6	SPRING, TORSION	
			I /	P5	5	PIN	
			/	P4	4	CONTAINER	
			/	P3	3	TOP COVER	
			I /	P2	2	BOTTOM COVER	
			X	47D222836 G1	1	ASSEMBLY, PARENTAL DRUGS	

REQUIREMENTS PER ASS'Y. — LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. √

SIGNATURES	DAY	MO	YR
DRAWN	26	10	70
CHECKED	27	10	70
ISSUED	30	11	70
ENGR.	28	10	70
MGR.	29	11	70
	29	10	70
	29	10	70

GENERAL ELECTRIC
SPACE SYSTEMS DIVISION LOC PHILA., PA

FLUID/DRUG STORAGE CONTAINERS
CLINICAL S/S
IMBLMS B-4

SIZE	CODE IDENT NO.	
D	23991	ER47D222836

SCALE 1/1 SHEET 1 OF FIN

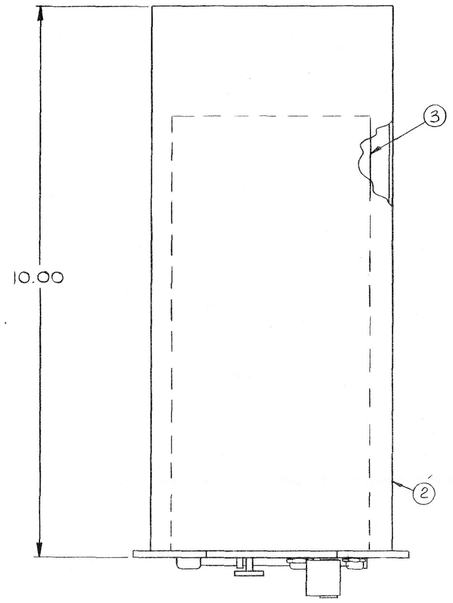
47D222836G2	47E220698G1
47D222836G1	47E220698G1
PART NO	NEXT ASSY

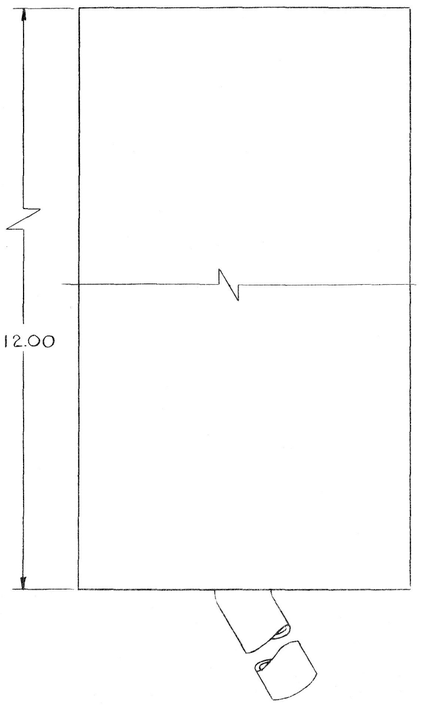
DIST NO

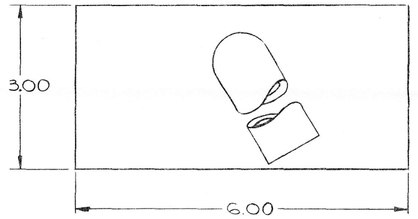
REV E SIZE D ER47D222836

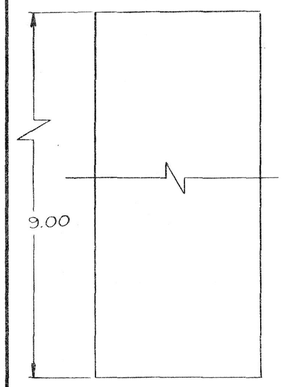
FORM-284-P (1-69) PRINTED IN U.S.A.

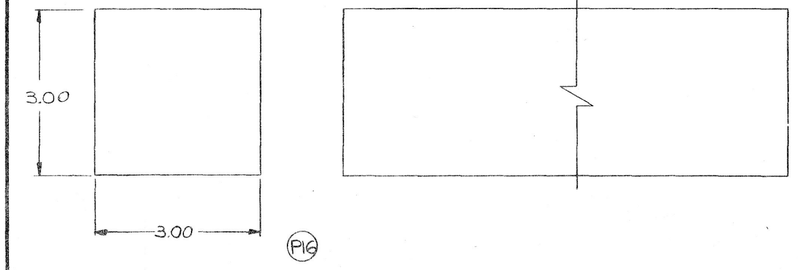
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

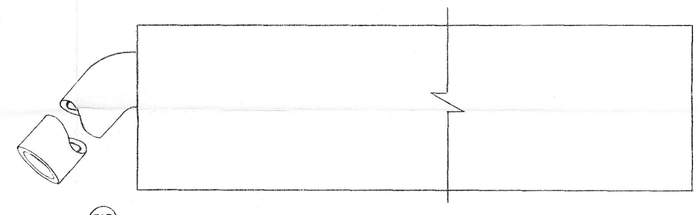


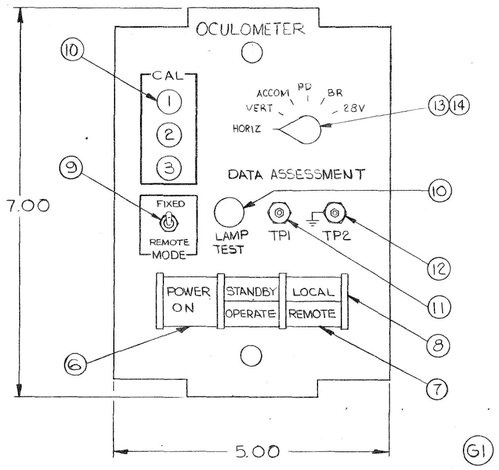


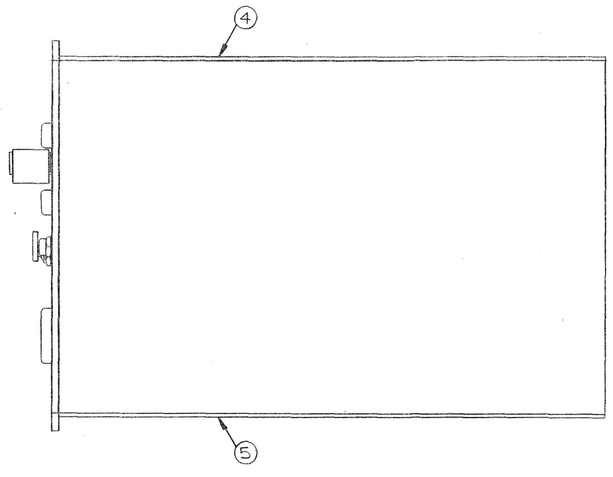












THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5251	PHYSIOLOGICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5388	PHYSIOLOGICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5397	OCULOMETER MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO (s), 2.7.1 OCULOMETRY
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

NOTES:

1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47E222838 GROUP NO. OR PT. NO. AS APPLICABLE PER 118A1526, CLASS 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE UNIT USING SUITABLE HARDWARE
4. ITEMS 3, 15 & 16 MUST CONFORM TO GE SPECIFICATION 70SD5397.

VENDOR NOTES:

A. MASTER SPECIALTIES CO. COSTA MESA, CALIF
B. ALCO ELECTRONIC PROD., INC LAWRENCE, MASS.
C. CONTROLS CO. OF AMERICA FOLCROFT, PA.
D. OAK MFG CORP CRYSTAL LAKE, ILL.

PRELIMINARY

	47E222838P16	16	FIXED OCULOMETER UNIT	4
	47E222838P15	15	REMOTE OCULOMETER UNIT	4
1	MS91528-CK1B	14	KNOB	
1	399217A	13	SWITCH, ROTARY	D
1	MS16108-3A	12	TEST JACK, BLACK	
1	MS16108-8A	11	TEST JACK, YELLOW	
4	W9601-B	10	SWITCH, PUSHBUTTON	C
1	MSTG-106D	9	SWITCH, TOGGLE	B
4	90E505	8	BARRIER	A
2	90EAK4F3J2WL2N1	7	SWITCH, PUSHBUTTON, ILLUM	A
1	90EAK4F3J1WL1N1	6	SWITCH, PUSHBUTTON, ILLUM	A
1	47E222825P13	5	COVER, BOTTOM	
1	47E222825G9	4	COVER, TOP	
1	47E222838P3	3	INTERNAL CIRCUITS	4
1	47E222825G1	2	MODULE	
X	47E222838G1	1	ASSY, OCULOMETER ELECTRONICS UNIT	
G4 G3 G2 G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
REQUIREMENTS PER ASS'Y.			LIST OF MATERIAL	

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47E222838P16	47E220736G3
47E222838P15	47E220700G1
47E222838G1	47E220700G1
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES--
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL--
ALL SORF

SIGNATURES	DAY	MO	YR
DRAWN E. J. Hooker	27	10	70
CHECKED [illegible]	29	10	70
RELEASED PE 5/S	14	11	70
ENGRG [illegible]	24	10	70
MFG [illegible]	30	10	70
QUALITY [illegible]	30	10	70
PROJ. MGR. [illegible]			

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

MODULE, ASSEMBLY OF OCULOMETER
PE 5/S IMBLMS B4

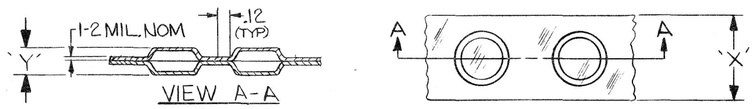
SIZE	CODE IDENT NO.	
E	23991	ER47E222838

SCALE 1/1 SHEET 1 OF 1

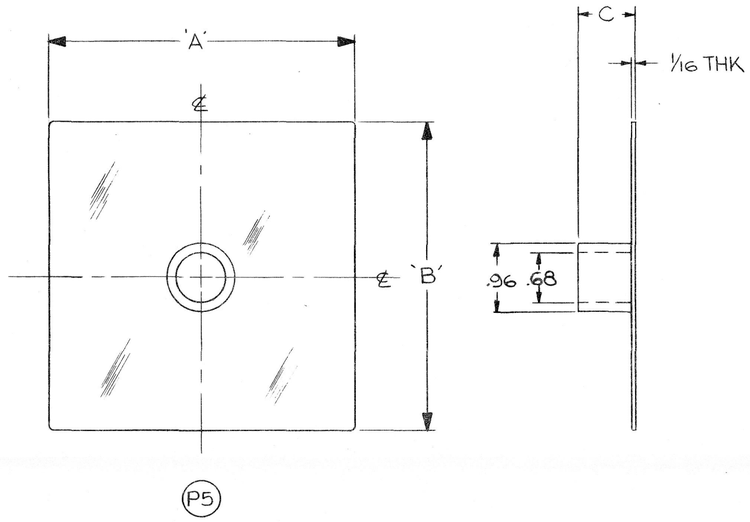
REV E ER47E222838

PRINTED IN U.S.A.

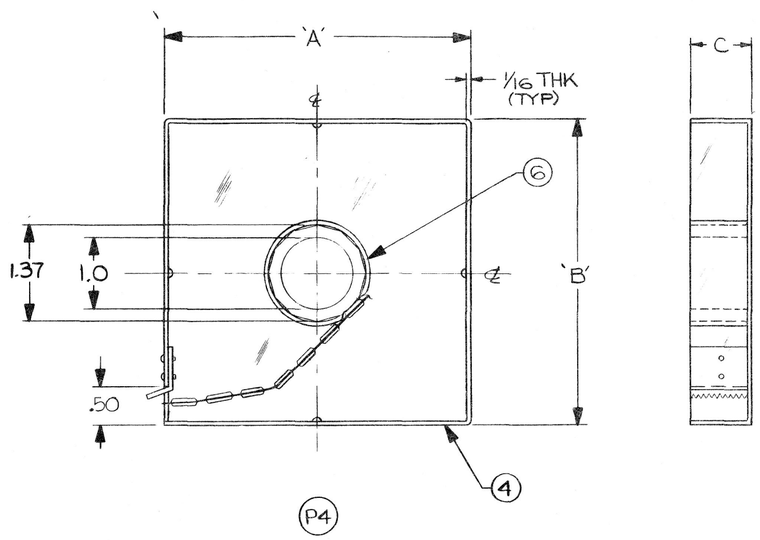
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



(P8) NO SCALE



(P5)



(P4)

NOTES:

1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE 47D222839 GROUP NO. OR PART NO AS APPLICABLE PER 118A1526, CLASS 21.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD5250	CLINICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5398	CLINICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s). N/A
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

GROUP NO.	'A' DIM.	'B' DIM.	'C' DIM.	'X' DIM.	'Y' DIM.
G1	3.12	3.12	.62	.50	.12
G2	4.37	4.37	.87	.75	.18
G3	5.62	5.62	1.12	1.0	.25

VENDOR NOTES:

A. SMITH, KLINE & FRENCH
PHILA, PA. (OR EQUIVALENT)

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
1	1	1		47D222839P8	8	STRIP, TABLET, (100 TABLETS)	A
1	1	1		47D222839P7	7	CUTTER, SERRATED	
1	1	1		P6	6	CUSHION, STYROFOAM	
1	1	1		P5	5	COVER	
1	1	1		P4	4	CASSETTE	
X				G3	3	ASSEMBLY	
	X			G2	2	ASSEMBLY	
		X		47D222839G1	1	ASSEMBLY	

REQUIREMENTS PER ASS'Y.

LIST OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN R. Hacker	29	10	70
CHECKED E. Edvard	4	11	70
ISSUED M. D. Nicer	20	11	70
ENGRG M. Fuselli	4	11	70
APPROVED			70
APPROVED R. J. Williams	30	10	70
N. S. H. & F.	30	10	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT LOC PHILA, PA.

ASSEMBLY OF, DRUG TABLET/CAPSULE PACKAGING

IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D222839

SCALE 1/1 SHEET 1 OF 1

DIST TO

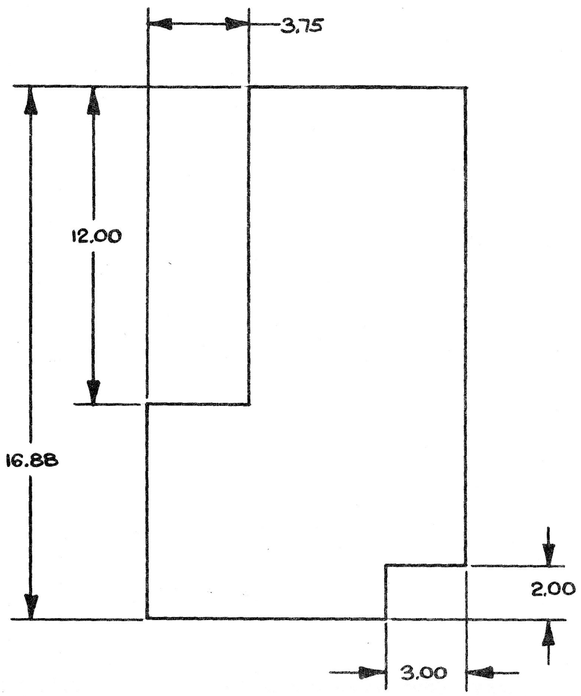
47D222839G3	
47D222839G2	47E2206986
47D222839G1	
PART NO.	NEXT ASSY

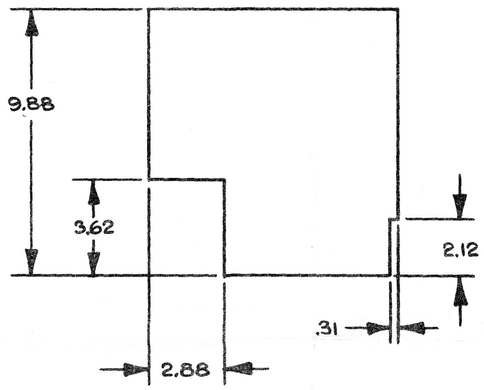
PN-904-F (1-69) PRINTED IN U.S.A.

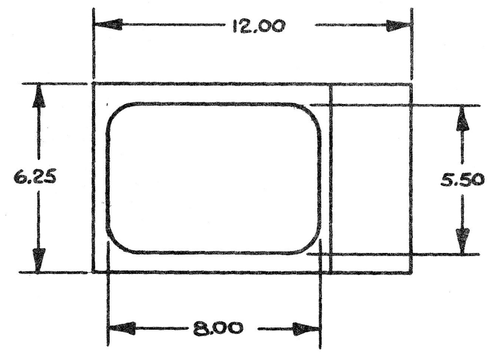
SIZE		REV
C	ER47C222840	

REVISIONS

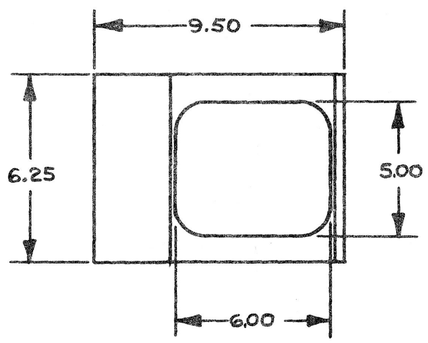
ZONE	LTR	DESCRIPTION	DATE	APPROVED







P1



P2

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5258	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5392	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5375	BLACK AND WHITE MONITOR SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

NOTES:

1. PARTS MUST CONFORM TO GE SPEC. 70SD5375.

MAJOR SUBASSEMBLIES:
TV MONITOR ELECTRONICS
CATHODE RAY TUBES
P1- REAR PORTED CRT SIMILAR TO SYLVANIA/CORNING DWG 9054-5131.
P2-SIMILAR TO WESTINGHOUSE WX-31595P

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47C222840P2	47E222821G1
47C222840P1	47E222821G2,G3
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
ALL SURF. ✓
MATERIAL—

SIGNATURES	DAY	MO	YR
DRAWN	30	10	70
CHECKED	3	11	70
RELEASED	10	11	70
ENGRG	4	11	70
MFG	3	11	70
	4	11	70
	2	11	70
	4	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC. PHILA., PA

T.V. MONITOR, BLACK & WHITE
CAD S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
C	23991	ER47C222840

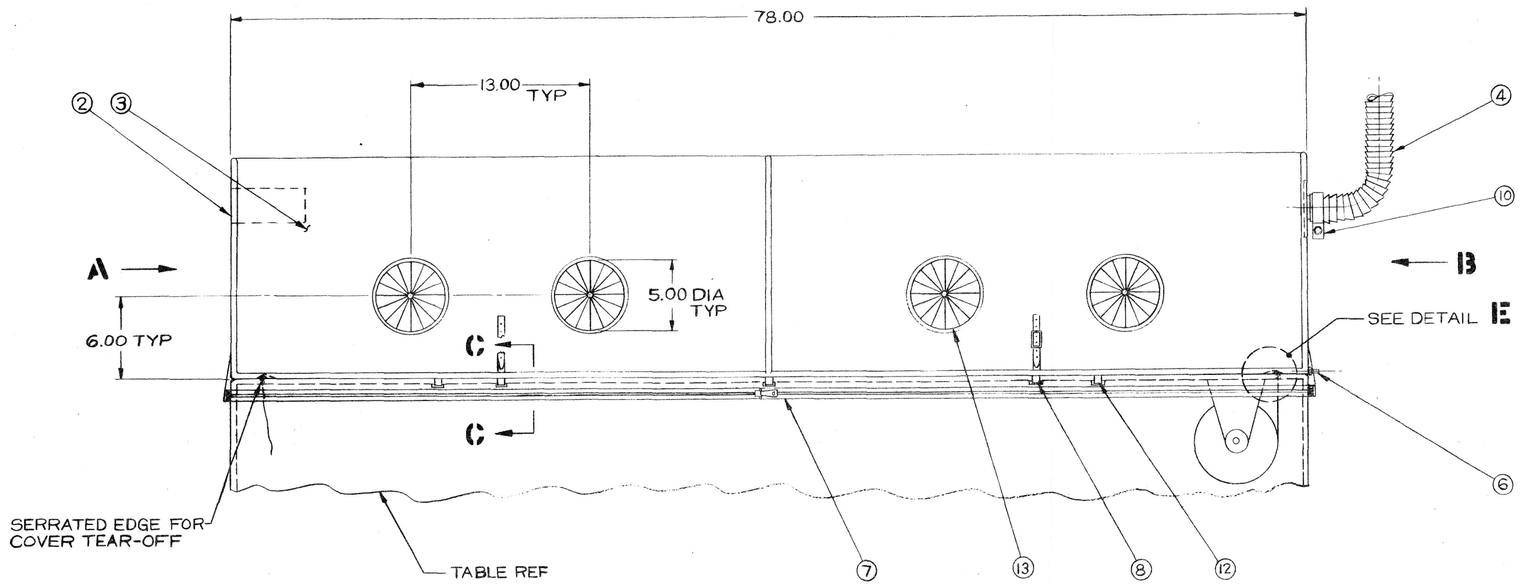
SCALE 1/4 SHEET 1 OF 1

DIST TO

SIZE C ER47C222840 REV

FN903 F (11-68)
PRINTED IN U. S. A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

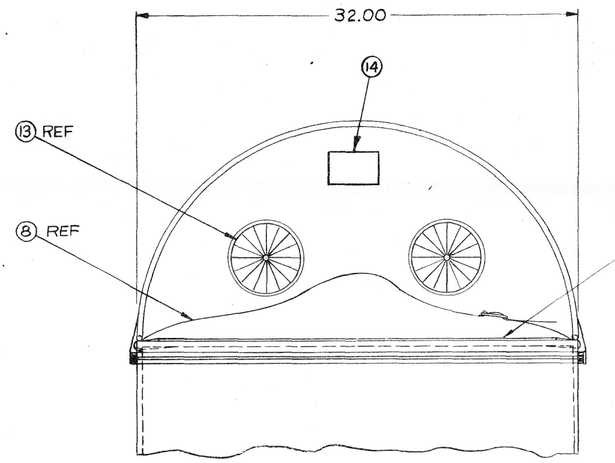


NOTES:

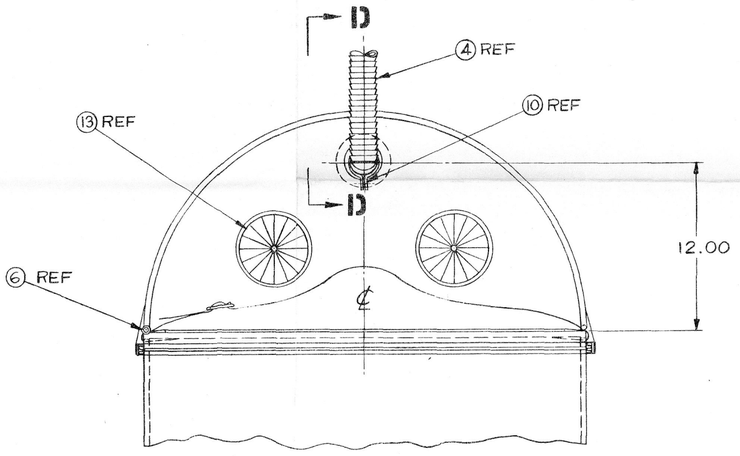
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222841 GROUP NO. OR PART NO. AS APPLICABLE PER 118A1526 CL. 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5250	CLINICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5398	CLINICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

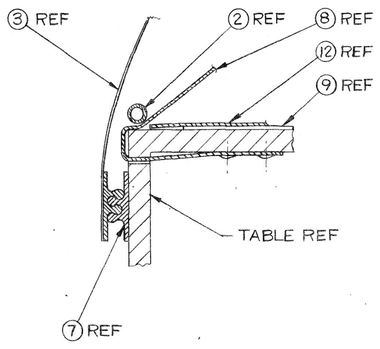


VIEW A

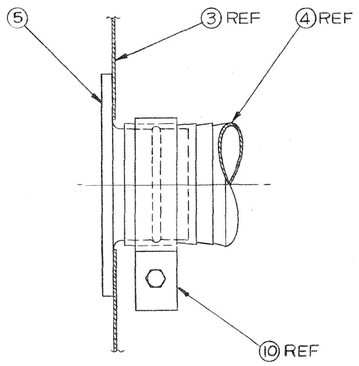


VIEW B

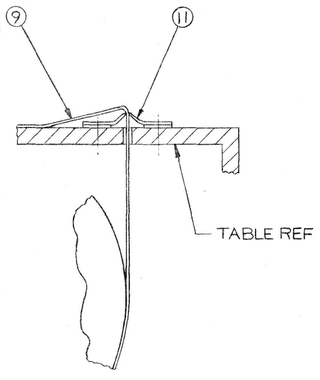
PRELIMINARY



SECTION C-C



SECTION D-D



DETAIL E

			1	47E222841P14	14	FILTER, PARTICULATE		
			12	47E222841P13	13	HAND PORT		
			2	P12	12	RESTRAINT STRAP, COVER		
			1	P11	11	SEAL		
			1	P10	10	CLAMP		
			AR	P9	9	TABLE COVER, DISPOSABLE		
			3	P8	8	RESTRAINT STRAP, PATIENT		
			1	P7	7	ZIPPER, PLASTIC		
			1	P6	6	QUICK DISCONNECT		
			1	P5	5	FITTING		
			AR	P4	4	AIR DUCT, FLEX.		
			AR	P3	3	ENCLOSURE, POLYETHYLENE		
			AR	P2	2	SUPPORT TUBE, POLYETHYLENE		
			X	47E222841G1	1	ENCLOSURE ASSEMBLY		
G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION		SEE NOTE
REQUIREMENTS PER ASS'Y.								

LIST OF MATERIAL

G1

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF ✓

SIGNATURES	DAY	NO	YR
DRAWN	30	10	70
CHECKED	3	11	70
ISSUED	26	11	70
ENGRG	4	11	70
MFG	5	11	70
R.F.	6	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DIV. LOC PHILA., PA.

CLINICAL ISOLATION BAG (COLLAPSIBLE) IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E222841

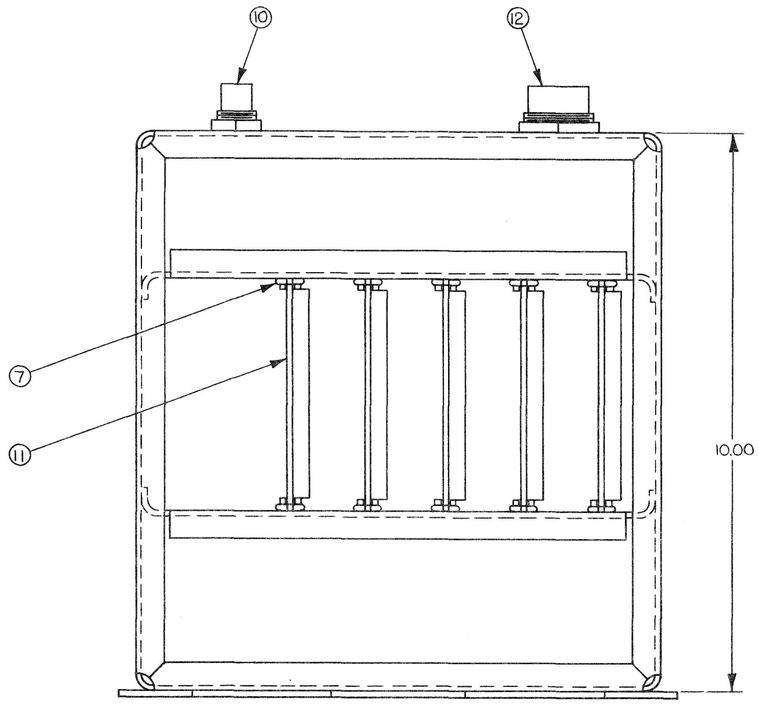
SCALE 1:4 SHEET 1 OF 1

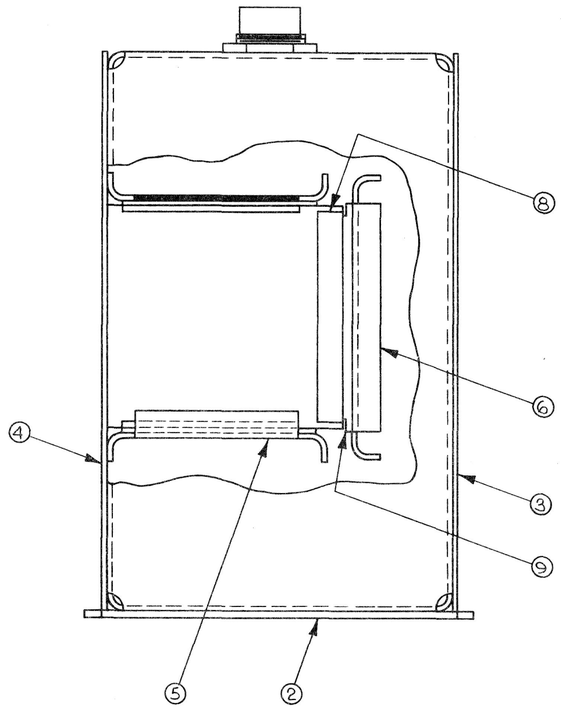
47E222841G1	47E220698G1
DWG NO.	NEXT ASSY

ER47E222841 REV

PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





NOTES
1. INTERPRETATION OF DRAWING TERMS AND TOLERANCES PER 118A1664.
2. MARK GE47E222842(GROUP OR PART NUMBER AS APPLICABLE)PER 118A1526 CL 21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

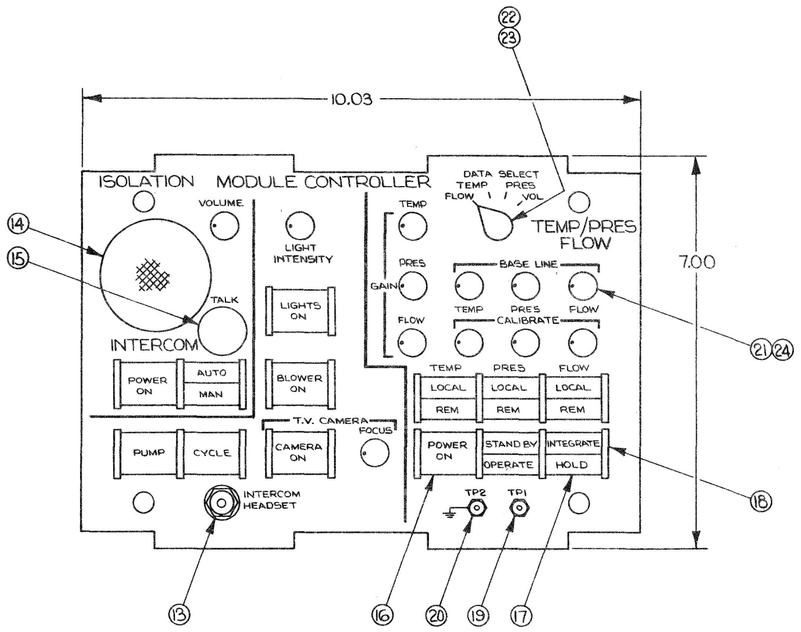
THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5255	SUPPORT EQUIPMENT SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5391	SUPPORT EQUIPMENT SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5359	ISOLATION MODULE SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES



VENDOR NOTES
A. THE BIRTCHER CORP
MONTEREY PARK, CALIF
B. AMP CORP
HARRISBURG, PA
C. BENDIX ELECTRICAL COMPONENT DIV
SIDNEY, NEW YORK
D. SWITCHCRAFT INC
CHICAGO, ILL
E. MASTER SPECIALTIES CO
COSTA MESA, CALIF
F. CONTROLS CO. OF AMERICA
FOLCROFT, PA
G. OAK MFG CO
CRYSTAL LAKE, ILL
H. BOURNS INC
RIVERSIDE, CALIF
I. OAKTON INDUSTRIES
MONROE, WISC.

G1

12	3535S	24	POTENTIOMETER	H
1	MS91528-0K1B	23	KNOB	
1	399223A	22	SWITCH, ROTARY	G
12	MS91528-0E1B	21	KNOB	
1	MS16108-3A	20	TEST JACK, BLACK	
1	MS16108-8A	19	TEST JACK, YELLOW	
20	90E505	18	BARRIER	E
6	90EA1C4F3J2WL2N	17	SWITCH, ILLUMINATED PUSHBUTTON	E
7	90EA1C4F3J1WL1N1	16	SWITCH, ILLUMINATED PUSHBUTTON	E
1	W9601-B	15	SWITCH, PUSHBUTTON	F
1	23A8C	14	SPEAKER	I
1	42A	13	PHONE JACK	D
1	LJT07RE-17-35P	12	CONNECTOR, 55 PIN	C
5	47E222842P11	11	PCB	
1	LJT07RE-9-6P	10	CONNECTOR, 6 PIN	C
5	202932-1	9	CONNECTOR, 71 PIN	B
5	202933-1	8	CONNECTOR, 71 PIN	B
10	17B-7-1	7	RETAINER, PCB	A
1	47E222842P6	6	BASE, CONNECTOR MOUNTING	
2	47E222842P5	5	BULKHEAD	
1	47E222826G10	4	COVER, TOP	
1	47E222826G14	3	COVER, BOTTOM	
1	47E222826G2	2	MODULE	
X	47E222842G1	1	ASSEMBLY	
G4 G3 G2 G1 REQUIREMENTS PER ASSY	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE

LIST OF MATERIAL

47E222842G1	47E220700G1		
PART NO.	NEXT ASSY		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2 PLACE DECIMALS ± .01 ALL SURF ✓; 3 PLACE DECIMALS ± .005; ANGLES ±; FRACTIONS ±; MATERIAL—

SIGNATURES	DAY	MO	YR
DRAWN J.Quiroga	3	11	70
CHECKED	4	11	70
ISSUED	12	11	70
ENGRG	4	11	70
	6	11	70
	4	11	70
	6	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA., PA

MODULE, ASSEMBLY OF ISOLATION CONTROLLER SE S/S IMBLMS B4

SIZE E | CODE IDENT NO. 23991 | ER47E222842

SCALE 1/1 | SHEET 1 OF 1

REV E ER47E222842 | REV E ER47E222842 | DIST 010

FOLD

PRINTED IN U.S.A.

DWG NO. ER47J222843 SH NO. 1 REV

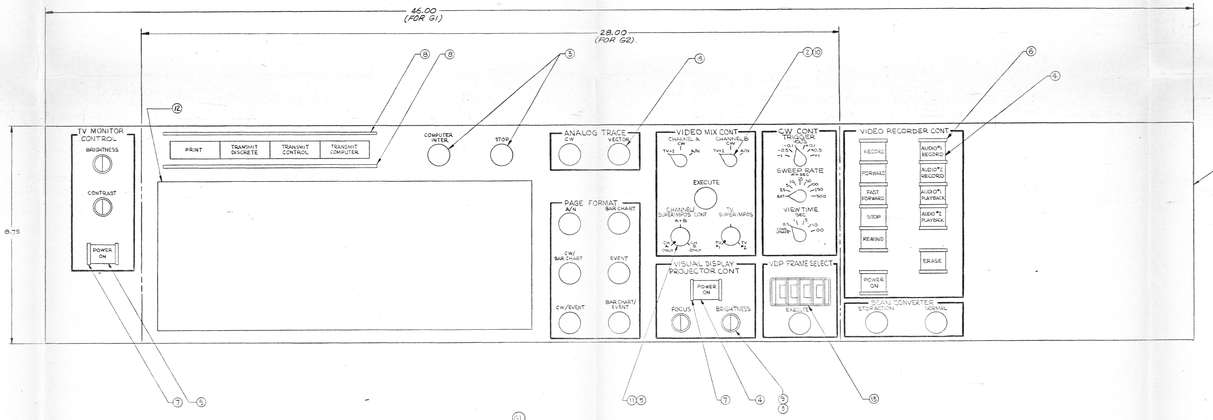
VENDOR NOTES:
A. OAK MFG CO
CRYSTAL LAKE, ILL.
B. CONTROLS CO OF AMERICA
FOLCROFT, PA.
C. MASTER SPECIALTIES CO
COSTA MESA, CALIF.
D. RAYTHEON CO/ND COMP OPERATION
QUINCY, MASS.
E. CHERRY ELECTRONIC PROD CORP
HIGHLAND PARK, ILL.
F. MICRO-SWITCH
FREEPORT, ILL.
G. BOURNS INC
RIVERSIDE, CALIF.

NOTES:
1. INTERPRETATION OF DWG TERMS AND TOLERANCES PER IISA1964
2. MARK SEAT/J22843 (GROUP OR PART NUMBER AS APPLICABLE) PER IISA/S26 CL21.
3. UNLESS OTHERWISE SPECIFIED, ASSEMBLE EQUIPMENT USING SUITABLE HARDWARE.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN.

70 SD 5256	CONTROL AND DISPLAY SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5192	CONTROL AND DISPLAY SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5247	COMBINED DISPLAY CONTROLLER SPECIFICATION.
70 SD 5212	SAFETY DESIGN REQUIREMENTS.
70 SD 5214	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH 3.0(a).
70 SD 5242	SAFETY DESIGN REQUIREMENTS.
70 SD 5195	HUMAN ENGINEERING REQUIREMENTS.

MAJOR COMPONENTS
A/N KEYBOARD SIMILAR TO 59SW1-2 MICROSWITCH.



REDUCED SIZE PRINT
SCALE: 0 1 2 3 4 INCHES

PRELIMINARY

		27		
		26		
		25		
		24		
		23		
		22		
		21		
		20		
		19		
		18		
X	47J222843G2	17	ASSEMBLY	
/	47J222843P6	16	PANEL	
12	14W2D-B	15	SWITCH, PUSHBUTTON	B
-	47J222843P4	14	PANEL	
/	1 T20-01-M4	13	SWITCH, THUMBWHEEL	E
/	47J222843P2	12	KEYBOARD	F
2	2 M39013-2-B	11	KNOB	
5	5 M39013-1-CN	10	KNOB	
2	4 PT10-12-2	9	KNOB, SELF LOCKING	D
2	2 47J222843P3	8	BARRIER	
2	4 3065-05	7	BARRIER	C
-	5 3065-01	6	BARRIER	C
4	6 3556-5	5	POTENTIOMETER	G
/	5 59AW1PA	4	SWITCH, ILLUMINATED PUSH BUTTON	C
2	2 W3D-R	3	SWITCH, PUSH BUTTON	B
3	3 5032-17	2	SWITCH, ROTARY	A
-	X 47J222843G1	1	ASSEMBLY	
QA SIS REQUIREMENTS PER NEXT	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	

LIST OF MATERIAL

DRAWN			GENERAL ELECTRIC
CHECKED			DEFENSE SYSTEMS DEPARTMENT, SYRACUSE, N.Y.
ENGR APPR			CONTROL PANEL
MFG APPR			CONTROL AND DISPLAY SYSTEM CONTROL PANEL AN/ IMBMS B4
PROJ MGR			
CONTRACT NO			
J 23991			ER47J222 343

47J222843G2 47E220999G1
47J222843G1 ATTACHMENT
PART NO NEXT ASSY

SECURITY CLASS ER47J222 843 Q 11

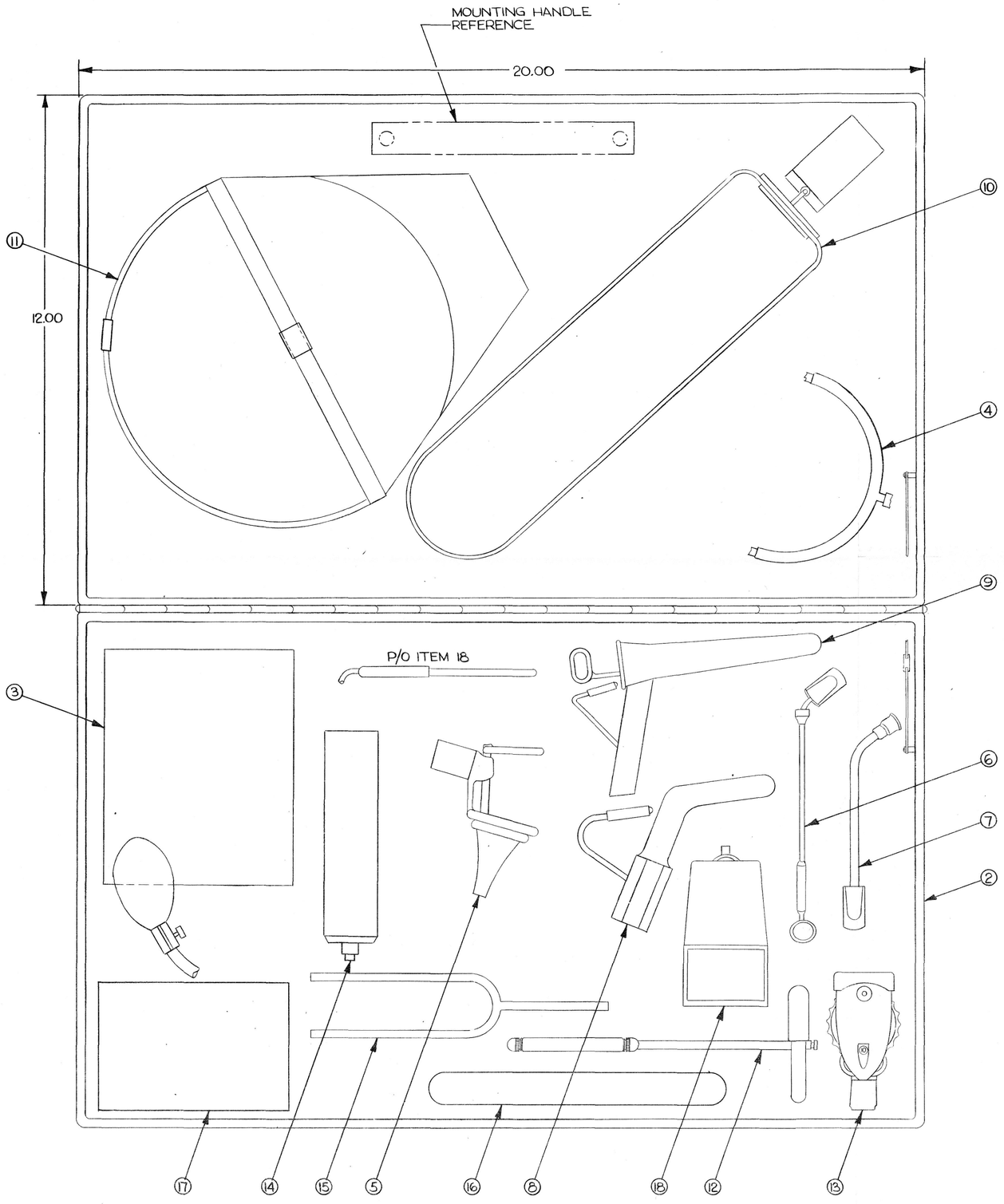
ER47J222843

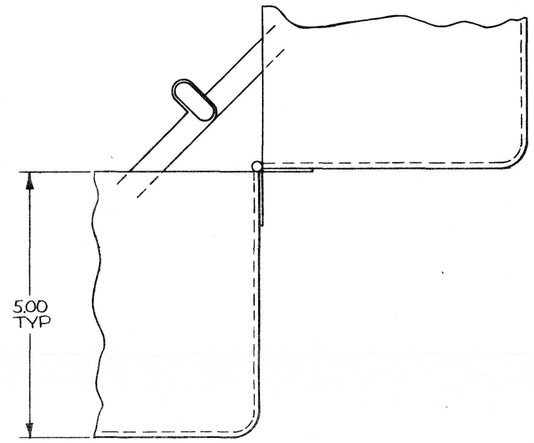
REVISIONS			
ZONE | LTR	DESCRIPTION	DATE	APPROVED

NOTES
1. DETAIL REQUIREMENTS AND VENDOR INFORMATION FOR INDIVIDUAL ITEMS PER GE SPEC 70SD5250.

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD5250	CLINICAL SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5398	CLINICAL SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.





PRELIMINARY

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	SEE NOTE
						LIST OF MATERIAL	
			1	47E222844P18	18	ELECTRIC THERMOMETER	
			12	P17	17	GLOVES, LATEX	
			25	P16	16	TONGUE DEPRESSOR	
			1	P15	15	TUNING FORK	
			1	P14	14	HANDLE	
			1	P13	13	OPHTHALMOSCOPE	
			1	P12	12	PERCUSSION HAMMER	
			1	P11	11	BINOCULAR LOUPE	
			1	P10	10	HEAD LIGHT	
			1	P9	9	ANOSCOPE	
			1	P8	8	NASAL SPECULUM	
			1	P7	7	SINUS TRANSILLUMINATOR	
			1	P6	6	LARYNGEAL MIRROR	
			1	P5	5	OTOSCOPE	
			1	P4	4	STETHSCOPE	
			1	P3	3	SPHYGMOMANOMETER	
			1	P2	2	CASE	
			X	47E222844G1	1	ASSEMBLY	

(G1) REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

47E222844G1	47E220698
PART NO.	NEXT ASSY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES--
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL--
ALL SURF ✓

SIGNATURES		DAY	MO	YR
DRAWN	[illegible]	13	11	70
CHECKED	[illegible]	17	11	70
ENGRG RELEASED	[illegible]	21	11	70
ENGRG	[illegible]	17	11	70
MFG	R. J. Dr Gerlomo	24	11	70
MFG	[illegible]	10	11	70

GENERAL ELECTRIC
SPACE SYSTEMS DEPT. LOC. PHILA. PA.

KIT, EXAMINATION
CLINICAL S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	ER47E222844

SCALE 1/1 SHEET 1 OF 1

USED ON ER47E222844 REV E
NEXT ASSY ER47E222844 REV E
DIST 10

PN-NSP 3-067 PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

SPACE VEHICLE / IMBLMS

SPACE VEHICLE POWER SUBSYSTEM — EXPERIMENT SUBSYSTEM INTERFACE PANEL

28 VDC POWER

INTERFACE

SYSTEM CONTROL CONSOLE
- SWITCHING AND CIRCUIT PROTECTION
- POWER SUPPLY
- +15V −15V +5V +28V
- TO CONTROL AND DISPLAY MODULES

CLINICAL / PHYSIOLOGICAL CONSOLE
- SWITCHING AND CIRCUIT PROTECTION
- TO ADDITIONAL MEASUREMENT MODULES
- SWITCHING AND CIRCUIT PROTECTION — MEASUREMENT MODULE (TYPICAL)
- REGULATED POWER SUPPLY
- +15V −15V +5V
- TO SIGNAL CONDITIONERS
- REGULATED POWER SUPPLY
- TO DAD S/S FIXED COMPONENTS

LABORATORY ANALYSIS CONSOLE
- SWITCHING AND CIRCUIT PROTECTION

ALTERNATE RDCU CONNECTION FOR AUTONOMOUS OPERATION

RDCU POWER BUS

SWITCHING AND CIRCUIT PROTECTION
- REGULATED POWER SUPPLY
- +15V −15 +5
- TO SIGNAL CODITIONERS

MEASUREMENT MODULE AUTONOMOUS OPERATION (TYPICAL)

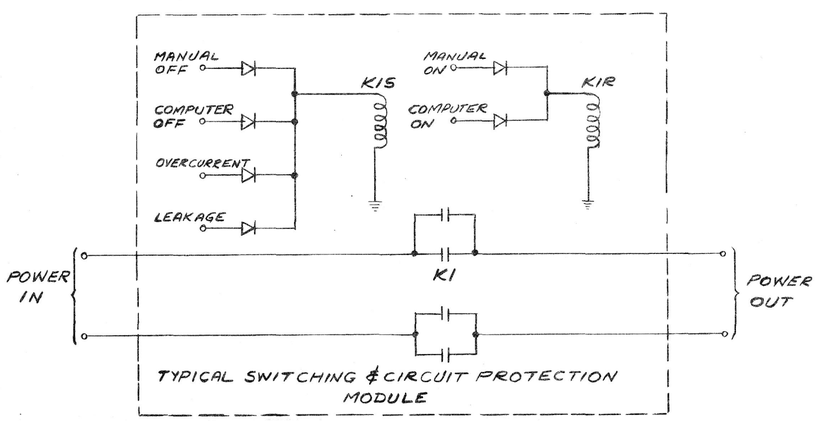
SWITCHING AND CIRCUIT PROTECTION
- POWER SUPPLY
- TO CRT AND DISPLAY CIRCUITS

REMOTE CONSOLE

REGULATED POWER SUPPLY
RDCU (TYP.)
SGU | SSU | DAU

TO ADDITIONAL RDCUs AS NEEDED

SWITCHING AND CIRCUIT PROTECTION — CONTROLLED ENVIRONMENT CHAMBER



TYPICAL SWITCHING & CIRCUIT PROTECTION MODULE

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70SD5257 ELECTRICAL POWER AND SIGNAL DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION

70SD5236 PRELIMINARY EMC/EMI PLAN

70SD5267 PRELIMINARY POWER DISTRIBUTION AND LOADING ANALYSIS

EP&SD S/S COMPONENTS

OTHER IMBLMS COMPONENTS

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF ✓

SIGNATURES	DAY	MO	YR
DRAWN	19	11	70
CHECKED	21	11	70
ENGR APPR	5	12	70
ENGR MGR	20	11	70
	20	11	70
	20	11	70

GENERAL ELECTRIC — DEPT — LOC

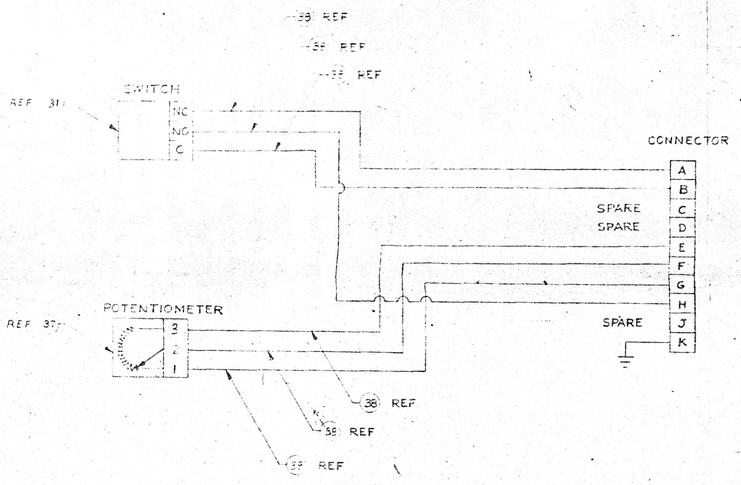
DIAGRAM ELECTRICAL POWER DISTRIBUTION IMBLMS B4

SIZE	CODE IDENT NO.	
E	23991	47E222845

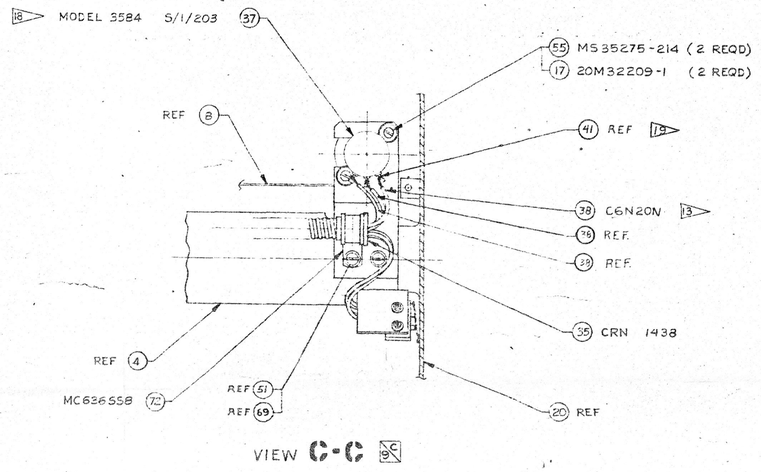
SCALE — SHEET 1 OF 1

REV 47E222845 E

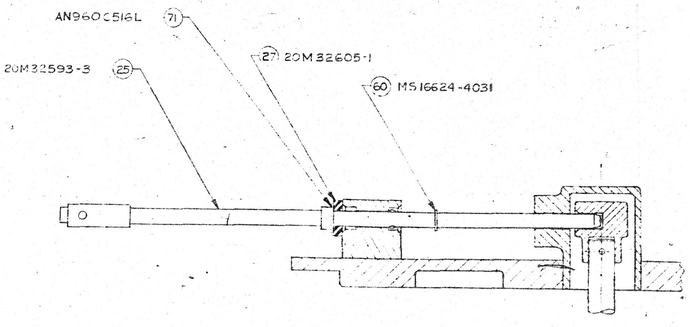
REV 47E222845 E



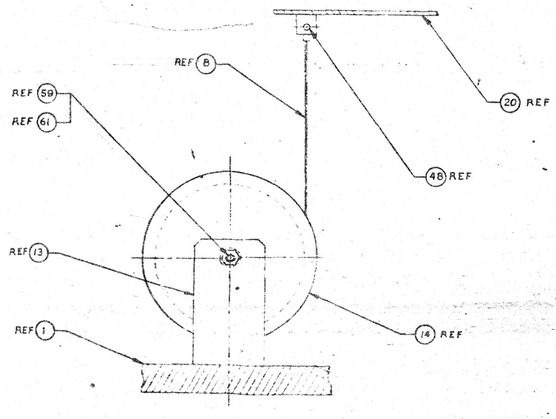
WIRING DIAGRAM



VIEW C-C



SECTION D-D



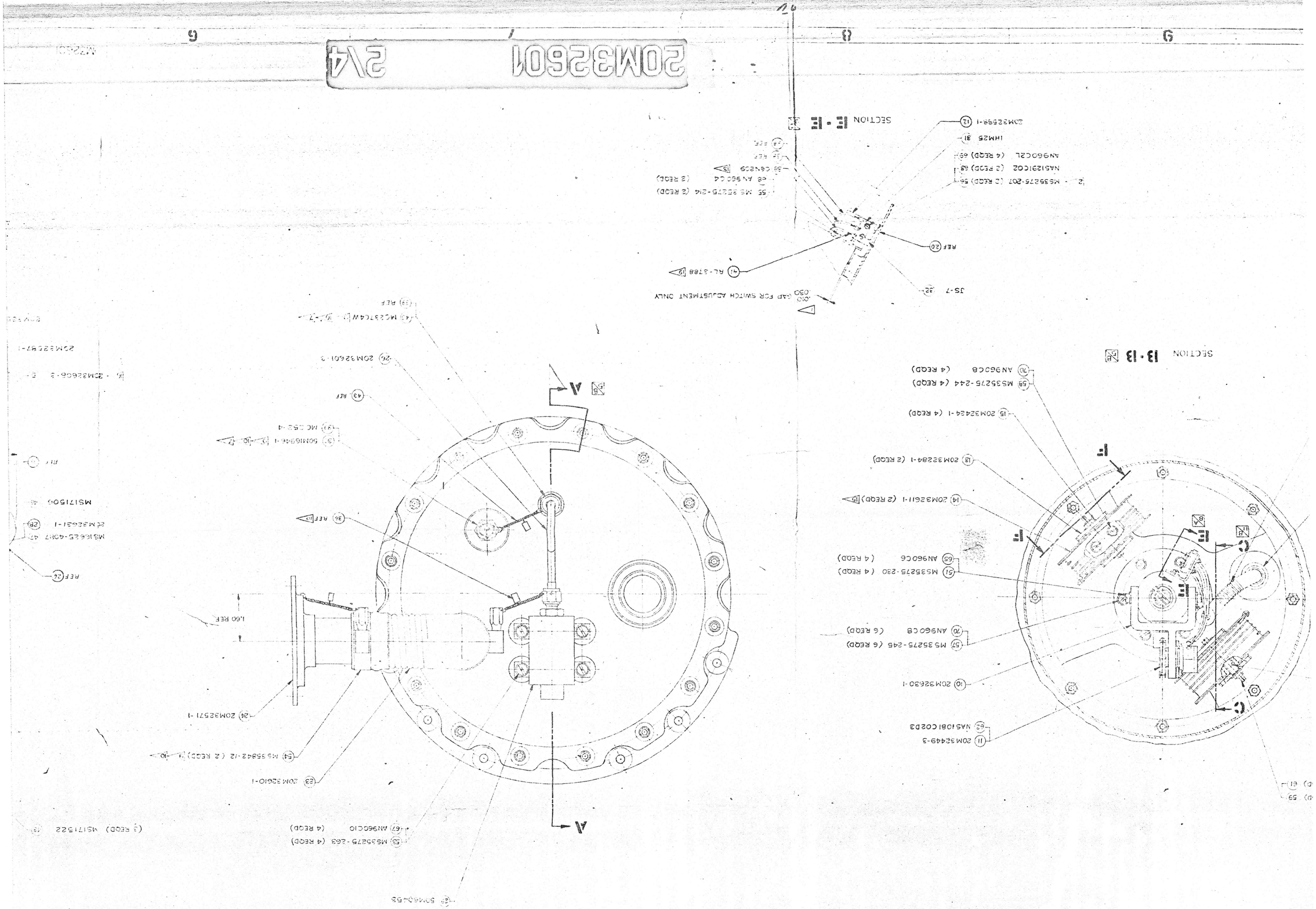
VIEW E-E

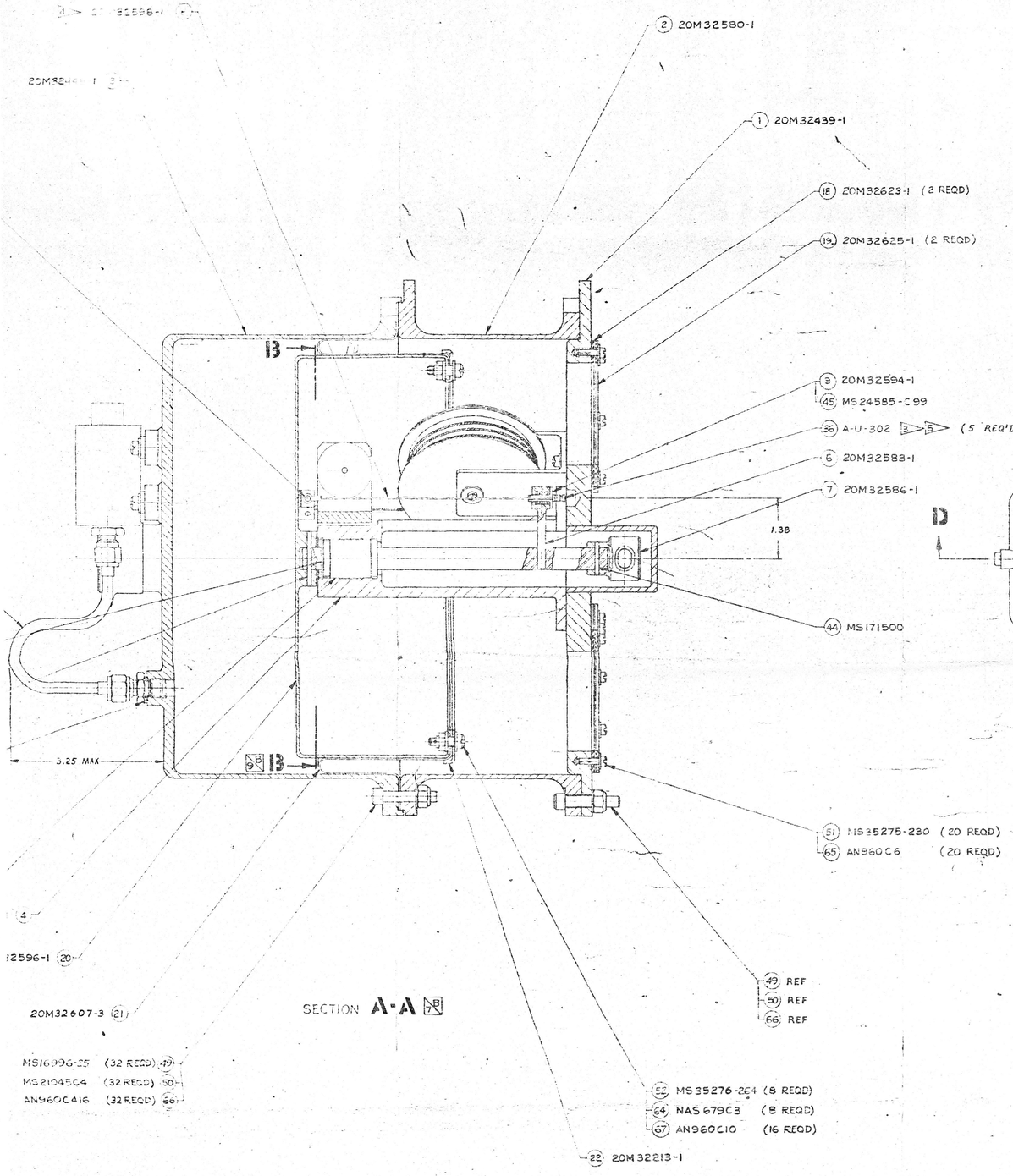
MS35275-237 (2 REQ
NAS 679C06 (2 REQ

20M32279-1 (2 REQD) 16

5330-09-034-1BF 34

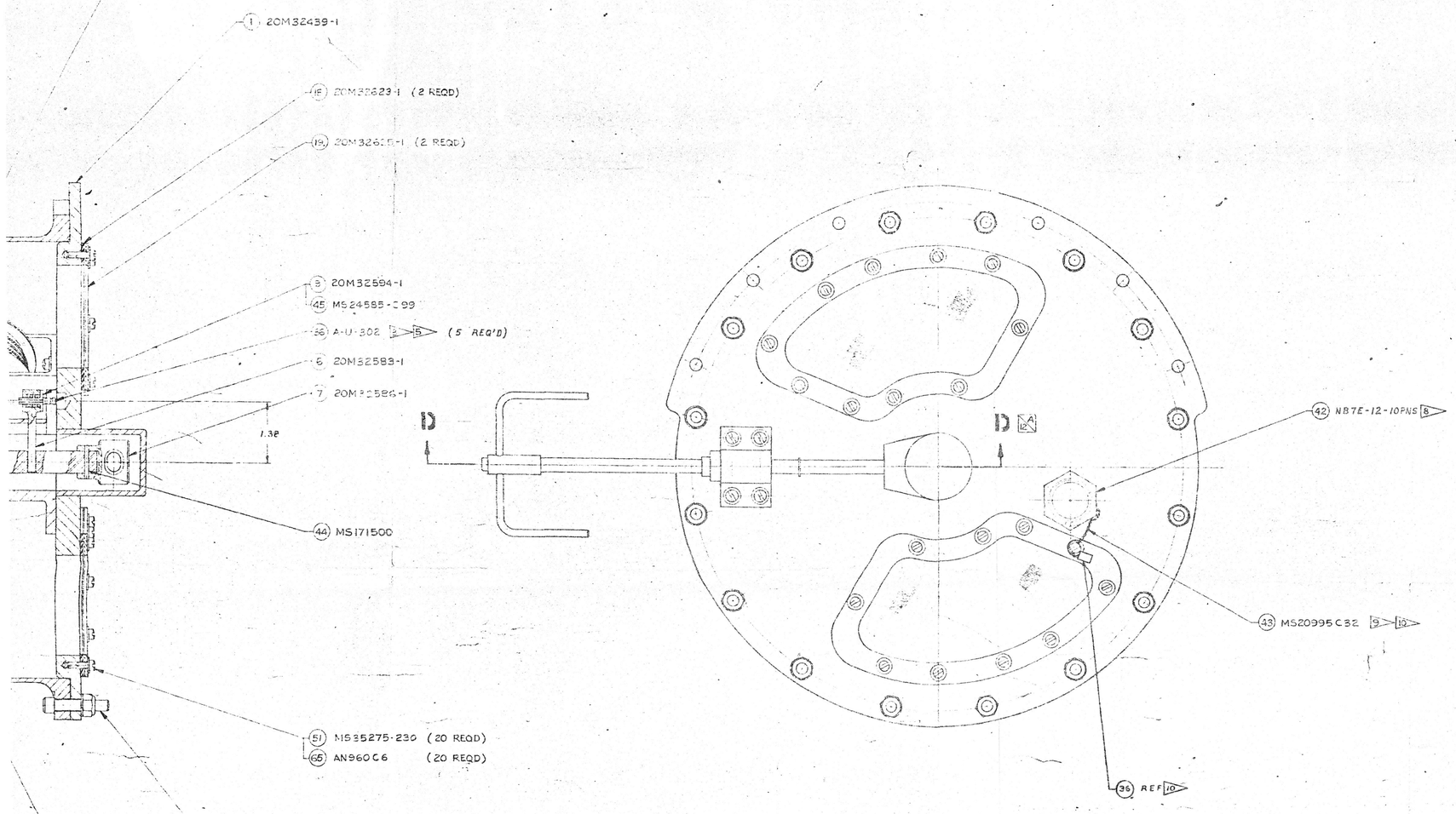
FCR-09-0-00 33


SECTION E - E
SECTION F - F
SECTION A - A
SECTION B - B
SECTION C - C
SECTION D - D
.010 GAP FOR SWITCH ADJUSTMENT ONLY
1.60 REF
(4 REQD) MS35275-244
(4 REQD) AN960C8
(4 REQD) MS35275-230
(4 REQD) AN960C6
(6 REQD) MS35275-245
(6 REQD) AN960C8
(4 REQD) MS35275-263
(4 REQD) AN960C10
(3 REQD) MS17152
MS17150-5


2 20M32580-1
1 20M32439-1
18 20M32623-1 (2 REQD)
19 20M32625-1 (2 REQD)
3 20M32594-1
45 MS24585-C99
36 A-U-302 3 5 (5 REQ'D)
6 20M32583-1
7 20M32586-1
1.38
44 MS171500
B
B
3.25 MAX
51 NS35275-230 (20 REQD)
65 AN960C6 (20 REQD)
49 REF
50 REF
66 REF
55 MS35276-2E4 (8 REQD)
64 NAS679C3 (8 REQD)
67 AN960C10 (16 REQD)
22 20M32213-1
MS16996-25 (32 REQD) 49
MS21045C4 (32 REQD) 50
AN960C416 (32 REQD) 66
20M32607-3 21
SECTION A-A
D
D
42 NB7E-12-10PNS 8
43 MS20995C32 9 12
36 REF 10

REVISIONS				
SHEET	LTR	DESCRIPTION	DATE	APPROVAL
1				

2 20M32580-1



NOTES:

1. ADJUST SWITCH (31) TO ACTUATE WHILE MAINTAINING GAP SPECIFIED BETWEEN PISTON (20) AND SUPPORT (4)
2. TORQUE TO 1.5 IN-LB MAX
3. CRIMP PER MSC/MSFC-JD-001
4. CRIMP ONE TEST SPECIMEN BEFORE AND ONE TEST SPECIMEN AFTER THE CRIMP IS MADE ON THE POTENTIOMETER CABLE. SUBJECT EACH TEST SPECIMEN TO A TENSILE LOAD OF 30±3 LBS. EVIDENCE OF TERMINAL SLIPPAGE, DAMAGE TO WIRE ROPE STRANDS OR OTHER DAMAGE TO EITHER TEST SPECIMEN SHALL BE CAUSE FOR REJECTION OF THE POTENTIOMETER CABLE. AFTER SUBJECTING TEST UNITS TO TENSILE TEST, SUBJECT THEM TO A LOAD OF 100±10 LBS. FAILURE OF EITHER TEST UNIT SHALL BE CAUSE FOR REJECTION OF POTENTIOMETER CABLE ASSY
5. ADJUST CABLE TENSION TO 5.75 LBS MAX
6. TORQUE FASTENERS PER MIL-STD-486
7. INSTALL PER MC 245
8. INSTALL PER 40M39581
9. INSTALL PER MS33540
10. TRIM ENDS OF PIGTAIL TO SQUARE EDGE AND PARALLEL SPLICE. INSTALL (36) AND CRIMP SECURELY TO END OF LOCKWIRE PER MANUFACTURERS RECOMMENDED PROCEDURES
11. IDENTIFY PER MIL-STD-130
12. ALL WIRE PER 40M39513A/2
13. INSTALL AND PROCESS WIRING PER MIL-W-5088
14. SOLDER PER NHB5300.4 (3A)
15. WIND REEL UNTIL CABLE TENSION IS 1.5 TO 1.7 LBS
16. SHAFT AND BALL BUSHING MUST REMAIN FULLY ENGAGED TO PREVENT LOSS OF BEARINGS
17. COMPLETED ASSY SHALL COMPLY WITH 20M32179
18. ADJUST POTENTIOMETER (37) TO OBTAIN A RESISTANCE OF 3±2 OHMS BETWEEN PINS G AND F WITH PISTON (20) RESTING AGAINST SUPPORT (4)
19. APPLY P/M RL-3788 REFSET CEMENT (41) TO ALL EXPOSED WIRES AND TERMINALS
20. MAINTAIN CLEANLINESS LEVEL PER MSFC-SPEC-164 FOR OXYGEN SERVICE DURING ASSY
21. BONDING, ELECTRICAL AND LIGHTNING PROTECTION FOR AEROSPACE SYSTEMS PER MIL-B-5087B

20M32601

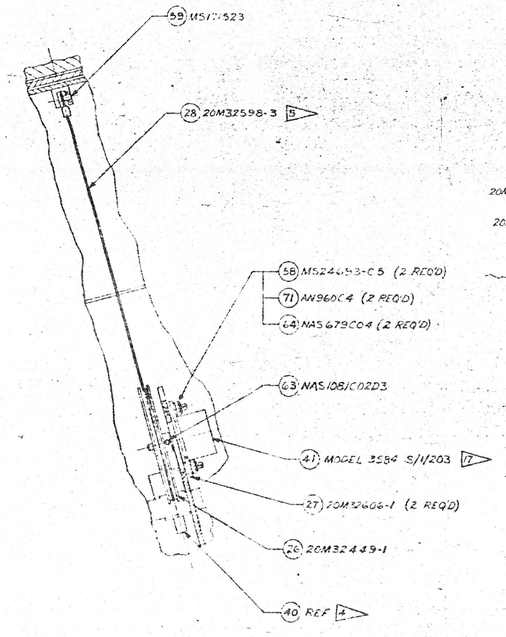
20M32601 4\4

20M32601-1 SHOWN

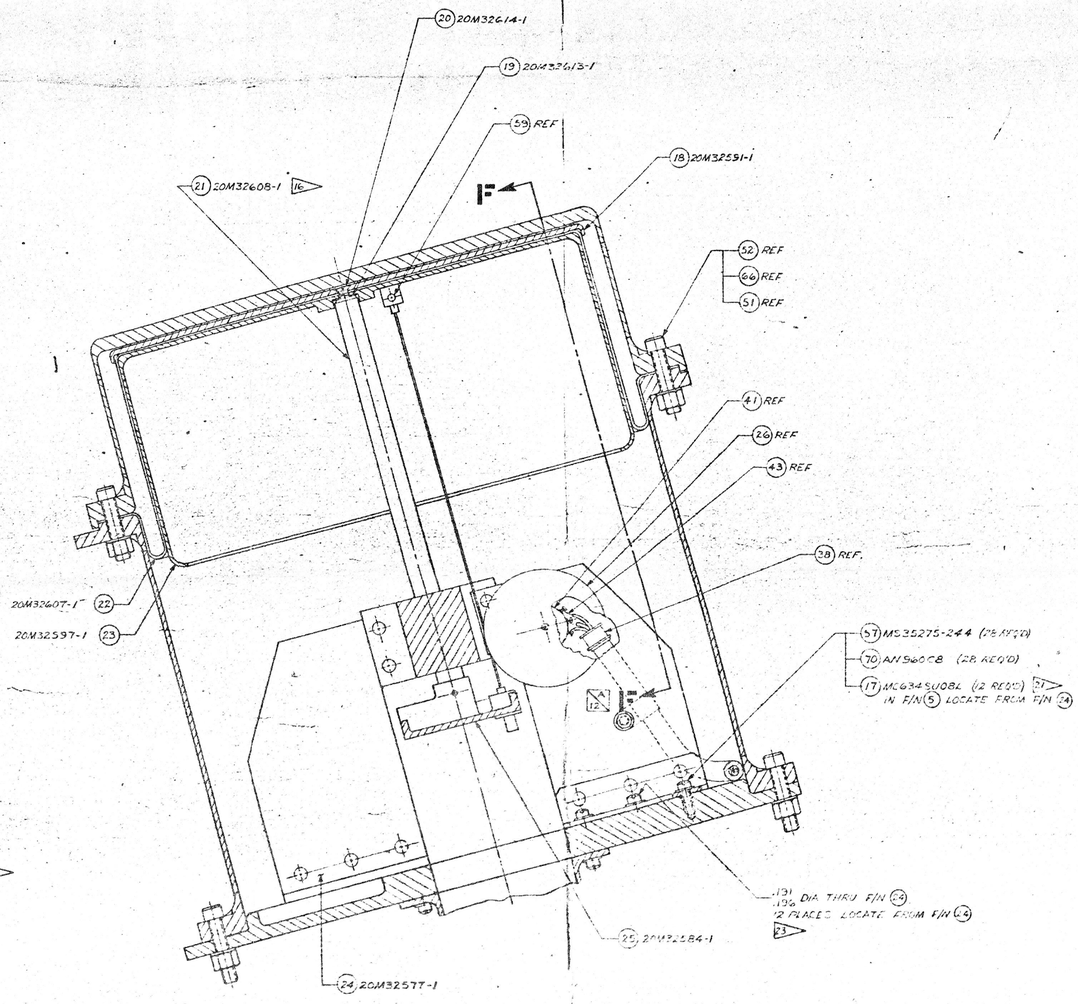
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING 6/10/70	INSPIRATION SPIROMETER ASSY, METABOLIC ANALYZER	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE ALABAMA	
10M13040-1 AAP-2				SIZE 20M32601	
NEXT ASSY USED ON				WEIGHT CONLESS	DATE
APPLICATION				SCALE FULL	UNIT WEIGHT 0.7 LBS

BROWN ENGINEERING A TELEDYNE COMPANY
CODE: 34925 CONTRACT: NAS8-20073

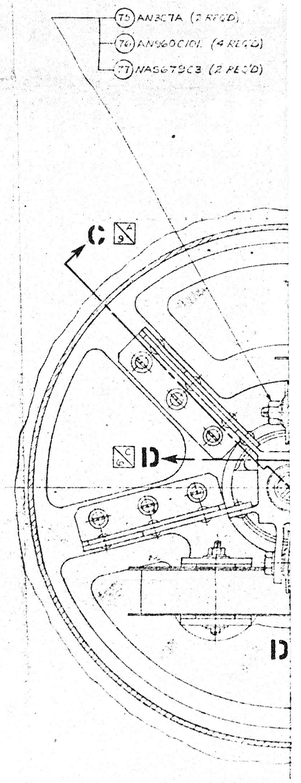
20M32601



SECTION F-F



SECTION A-A



20M32600 1\4

20M32600

REF'D)
(4 REQ'D)
(2 REQ'D)

78 20M32280-1 (2 REQ'D)
11 REF
58 REF
71 REF
64 REF
38 REF
34 FCR-06-0-00
57 REF
70 REF
35 REF
39 6130-1-54
36 6400-09-064-15
33 FCR-09-0-00
35 6400-66-084-15 (2 REQ'D)
74 MC6836SG (4 REQ'D)
37 5330-09-034-15F
57 REF
70 REF
22 NAS479C08 (2 REQ'D)
MM25 31

SECTION B-B

6 REF
54 MS35275-228 (3C REQ'D)
68 AN960C6 (34 REQ'D)
57 REF
70 REF
8 NB7E-12-10 PNS
44
40 REF

SECTION C-C

25 REF
21 REF
56 MS16625-4087
16 20M32631-1
⌖ A .010
32 JS-7
55 MS35275-207 (2 REQ'D)
69 AN960C2 (4 REQ'D)
61 NAS1291C02 (2 REQ'D)
43 RL-3788 TYP
58 CRN-1437 (2 REQ'D)
24 REF
57 REF
70 REF
62 REF

42 REF
1 MS35274-237 (2 REQ'D)
4 REF
60 NAS1771C7W (2 REQ'D)
9 20M32424-1 (4 REQ'D)
8 20M32284-1 (2 REQ'D)
20M32278-1 (2 REQ'D) 10
12 20M32279-1 (2 REQ'D)
57 REF
70 REF
15 20M32611-3 (2 REQ'D)
11
13 20M32593-1

SECTION D-D

20M32628-1 (2 REQ'D) 5
7 20M32627-1 (2 REQ'D)

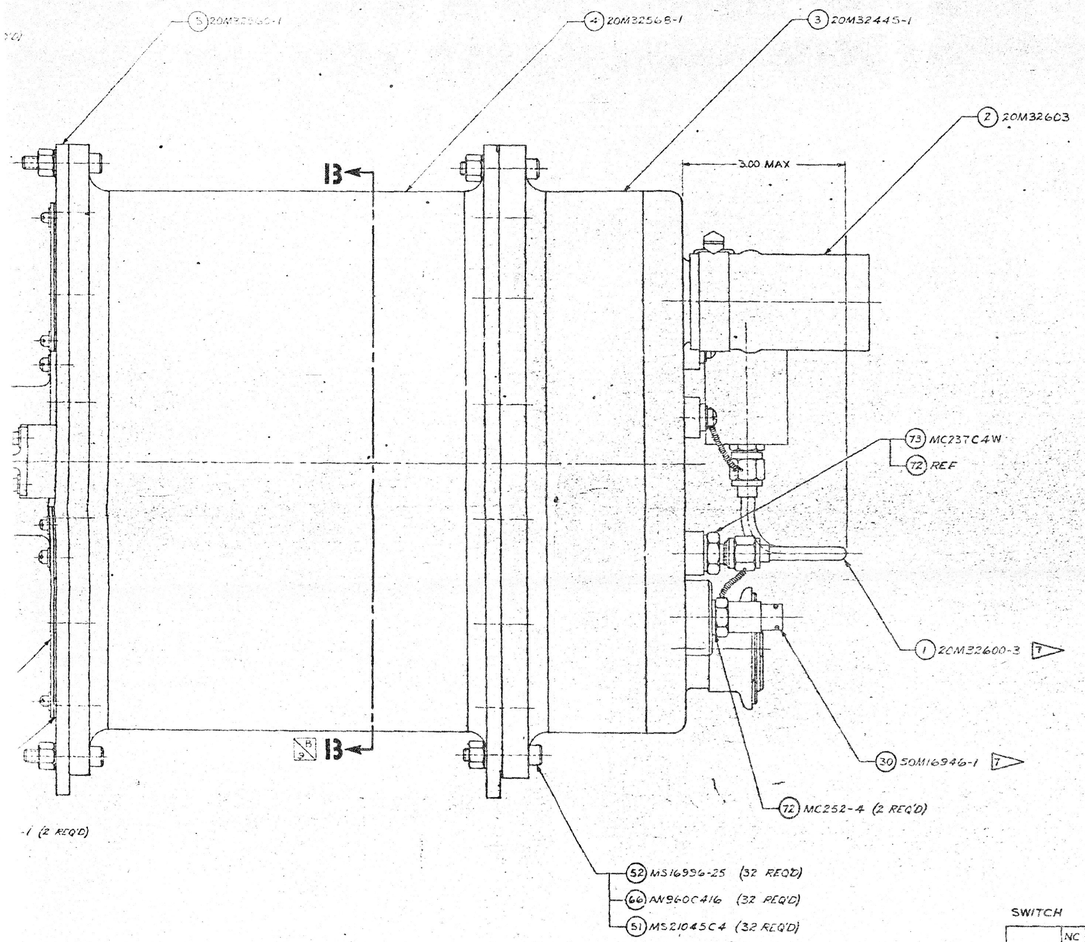
70 REF
14 20M32594-1
46 MS17499
48 MS16624-4031
12 REF
MS24585C59 47
REF 25
47 AN960C5L
15 20M32600-1

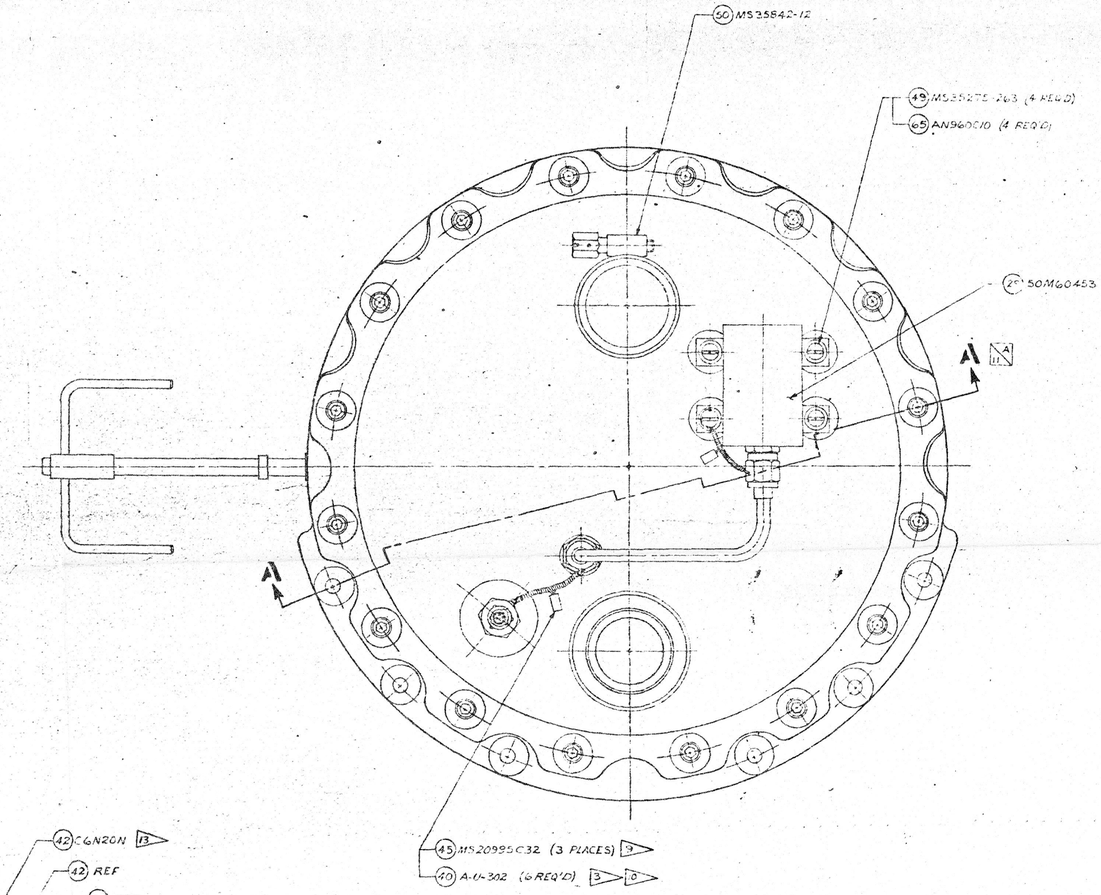
SECTION E-E
SHOWN IN STOWED POSITION

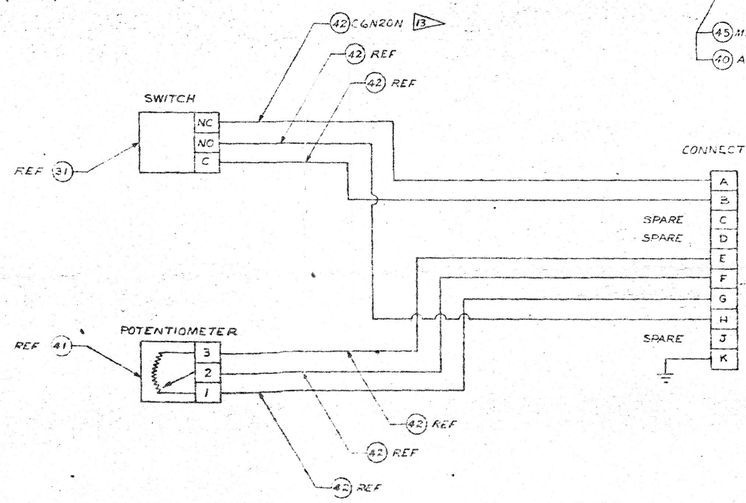
-237 (2 REQ.

-D (2 REQ'D)

4 REQ'D)







WIRING DIAGRAM

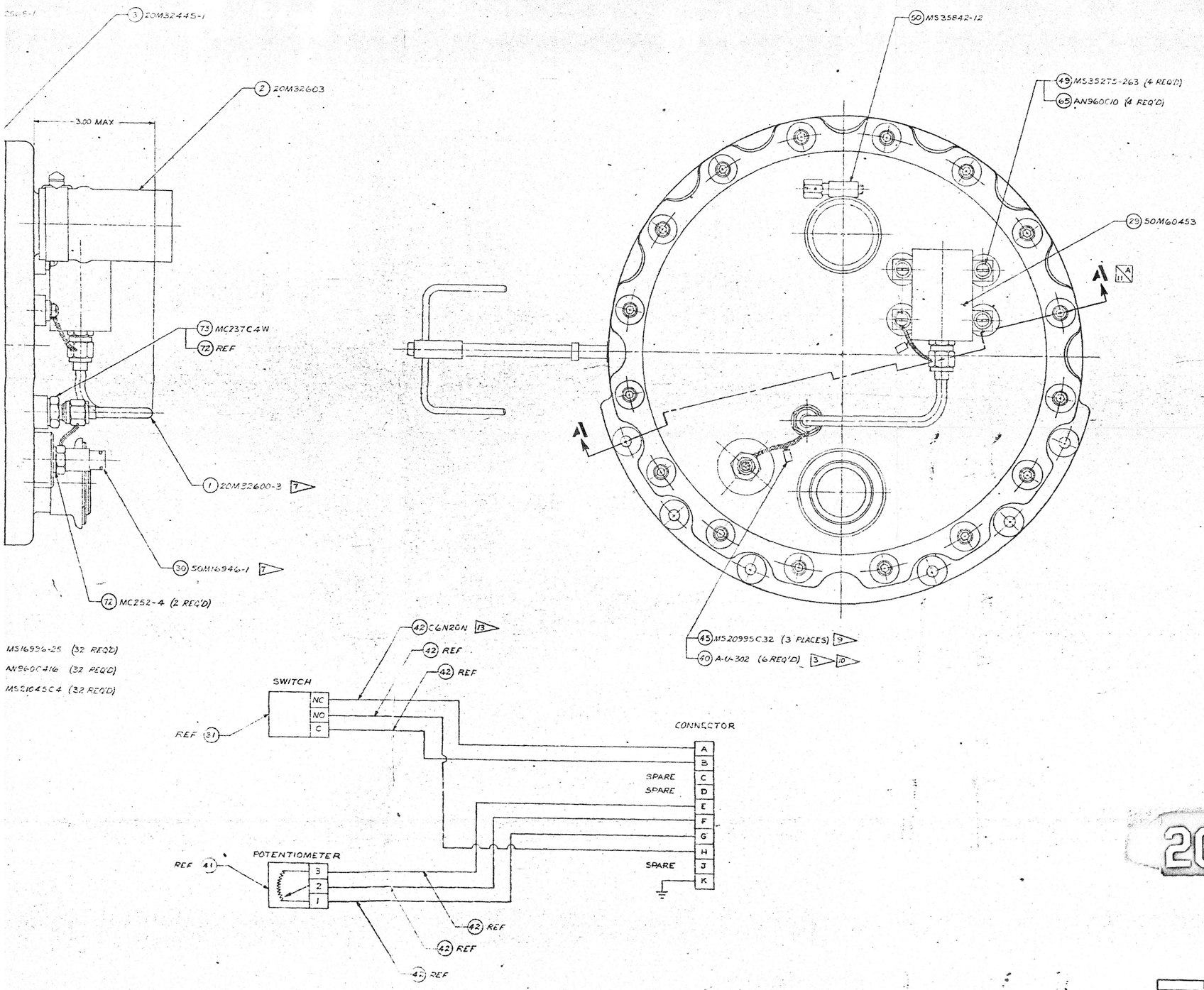
20M32600 3\4

SEE ENGINEERING RECORDS

NEXT ASSY | USED ON

APPLICATION

5 4 3 2 1



WIRING DIAGRAM

NOTES:

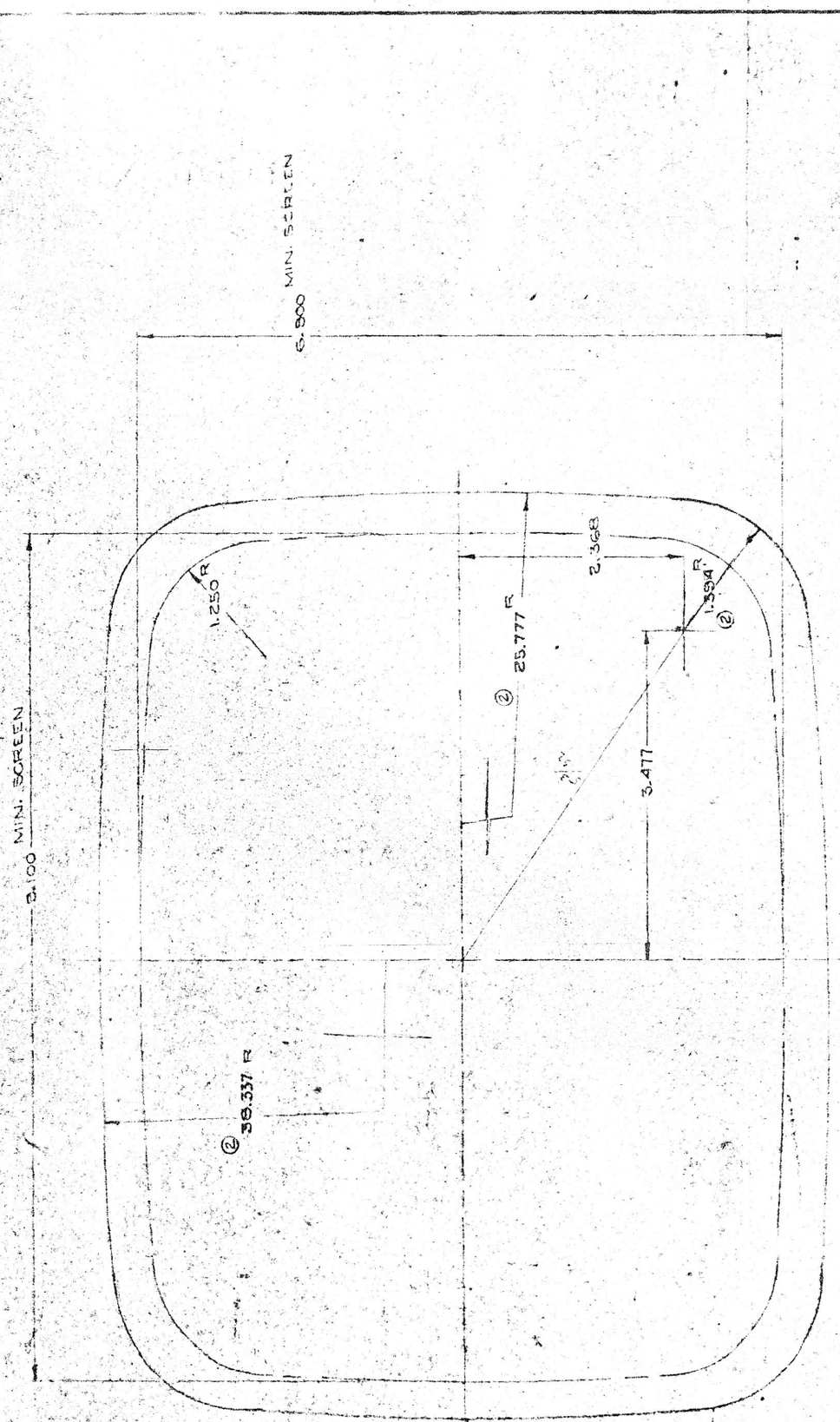
1. ADJUST SWITCH (31) TO ACTUATE WHEN PISTON (18) IS WITHIN .01 TO .03 INCHES OF NORMAL UNLOCKED POSITION
2. TORQUE TO 1.5 IN-LB MAX
3. CRIMP PER MSC/MSFC-JD-001
4. CRIMP ONE TEST SPECIMEN BEFORE AND ONE AFTER CRIMPS ARE MADE ON POTENTIOMETER CABLE AND REEL ASSEMBLY CABLES. SUBJECT EACH TEST SPECIMEN TO A TENSILE LOAD OF 301 3 LBS. EVIDENCE OF TERMINAL SLIPPAGE, DAMAGE TO WIRE ROPE STRANDS, OR OTHER DAMAGE TO EITHER TEST SPECIMEN SHALL BE CAUSE FOR REJECTION OF CABLES. AFTER SUBJECTING TEST UNITS TO TENSILE TEST, SUBJECT THEM TO A LOAD OF 100± 10 LBS. FAILURE OF EITHER TEST UNIT SHALL BE CAUSE FOR REJECTION OF CABLE ASSEMBLIES
5. ADJUST CABLE TENSION TO 5.75 IN-LBS MAX
6. TORQUE FASTENERS PER MIL-STD-486
7. INSTALL PER MC145
8. INSTALL PER 40M39581
9. INSTALL PER MS33540
10. TRIM ENDS OF PIGTAIL TO SQUARE EDGE AND PARALLEL SPLICE. INSTALL (40) AND CRIMP SECURELY TO END OF LOCKWIRE PER MANUFACTORS RECOMMENDED PROCEDURES
11. IDENTIFY PER MIL-STD-130.
12. ALL WIRE PER 40M39513A/2
13. INSTALL AND PROCESS WIRING PER MIL-W-5088
14. SOLDER PER NHB 5300.4 (3A)
15. WIND REEL UNTIL CABLE TENSION IS 1.5 TO 1.7
16. SHAFT AND BALL BUSHING MUST REMAIN FULLY ENGAGED TO PREVENT LOSS OF BEARING
17. ADJUST POTENTIOMETER (41) TO OBTAIN A RESISTANCE OF 312 OHMS BETWEEN PINS E AND F WITH PISTON ASSY (18) RESTING AGAINST (3).
18. APPLY R/M RI-376B REFSET CEMENT (43) TO ALL EXPOSED WIRES AND TERMINALS
19. MAINTAIN CLEANLINESS LEVEL PER MSFC-SPEC-164, OXYGEN SERVICE, DURING ASSY
20. BONDING ELECTRICAL AND LIGHTNING PROTECTION FOR AEROSPACE SYSTEMS PER MIL-B-5087B
21. INSTALL (17) PER MC634
22. COMPLETED ASSEMBLY SHALL COMPLY WITH 20ME180
23. CHEMICALLY TREAT PER MIL-C5541, TYPE I, GRADE B, CLASS 2 BEFORE INSTALLATION

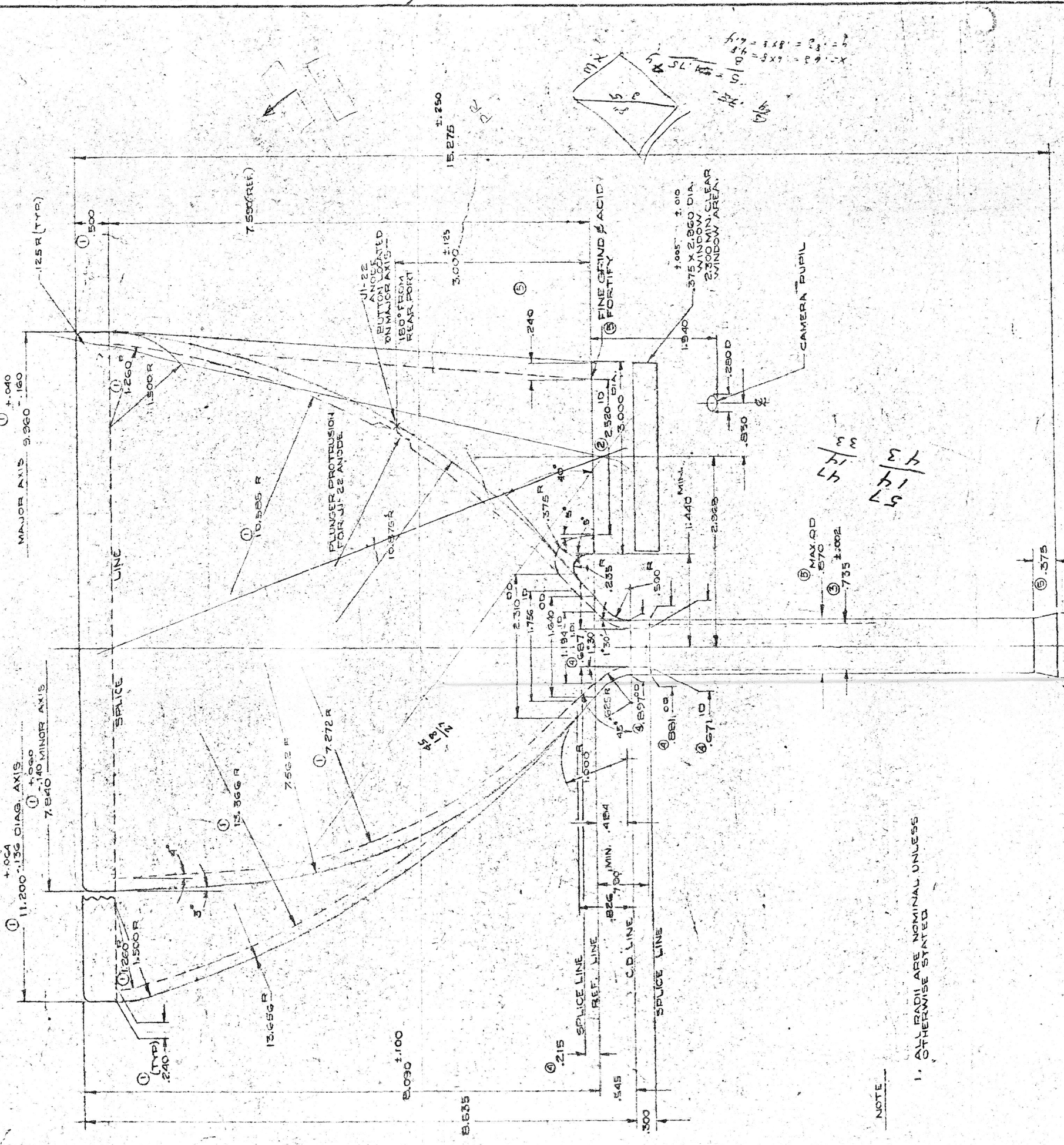
20M32600-1 SHOWN

20M32600 4\4

BROWN ENGINEERING, A TELEDYNE COMPANY					
CODE: 14925	CONTRACT: NASA-20073				
SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING 7-14-71	EXPIRATION	GEORGE C. MARSHALL SPACE FLIGHT CENTER	
	DIMENSIONS ARE IN INCHES			NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	
	TOLERANCES ON FRACTIONS / DECIMALS / ANGLES		POTENTIOMETER ASSY, METAPHYSIC ANALYZER	HUNTSVILLE, ALABAMA	
QM3540-1 AAF2	MATERIAL			SIZE A	20M32600
NEXT ASSY / USED ON	HEAT TREATMENT				
APPLICATION	FINISH				

.3 .4





NOTE

1. ALL RADII ARE NOMINAL UNLESS OTHERWISE STATED

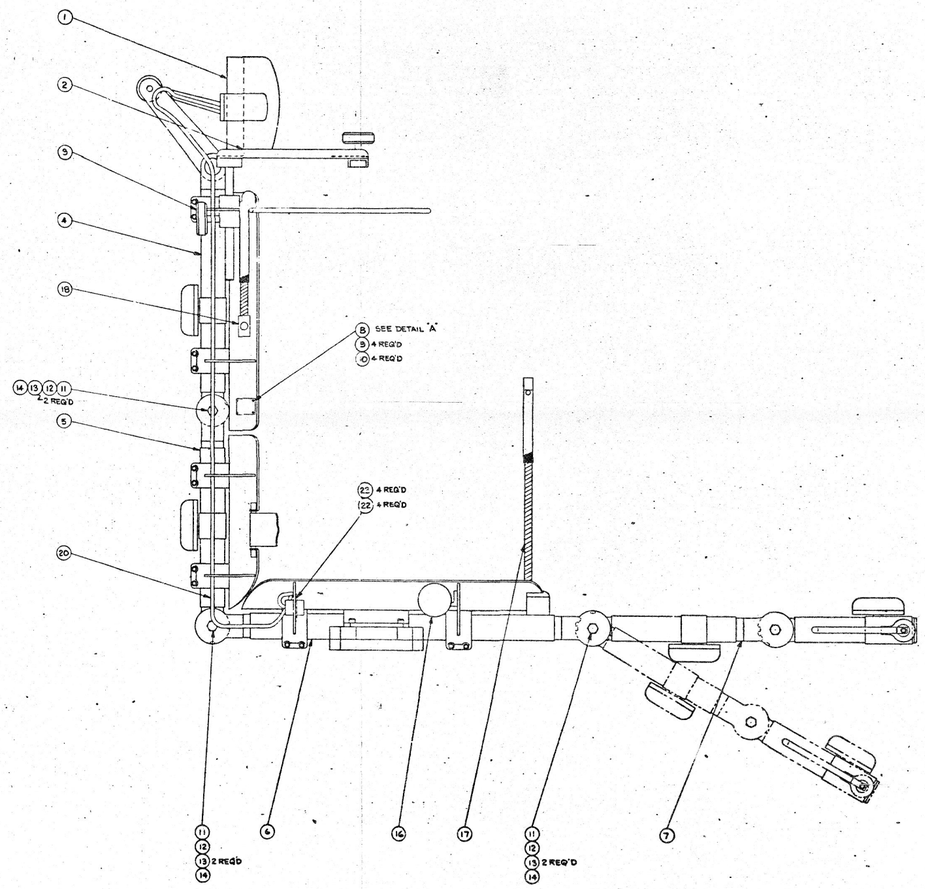
PAT. DEPT. APPROVAL		
FOR	BY	DATE
DESIGN		
DRAWING		
NO. APPD.		

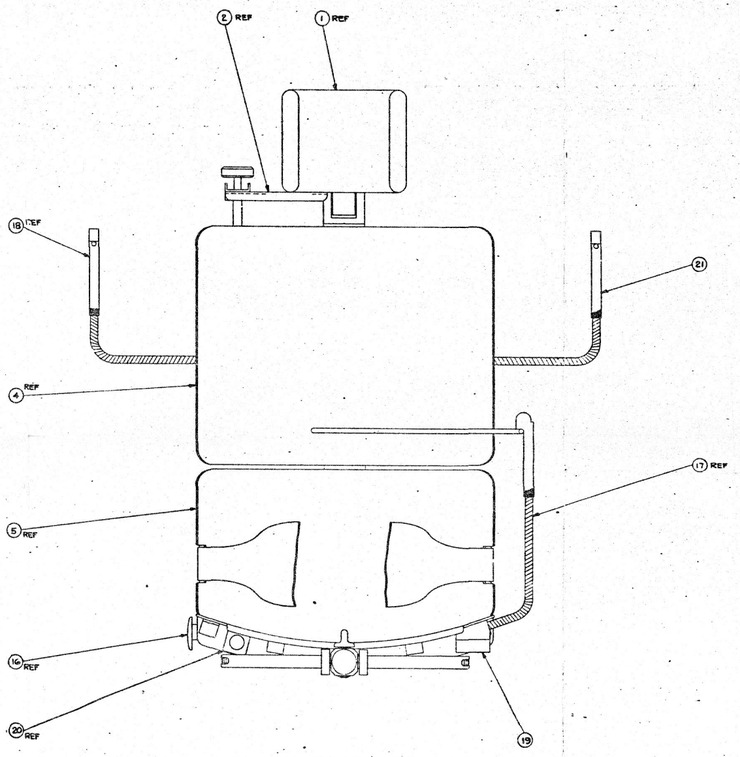
NO.	REVISIONS	BY	DATE
1 DWG	REVISED DIMS. 12.48, 12.52 ADDED .500 R & .240 (TYP.) CHANGED TO 1.260 R, 1.500 R 7.562 - 13.105 10.585 - 10.375 11.504 - 11.664 WAS 1.154		
	9.360 ± .160 WAS 9.540 ± .100		
	7.840 ± .140 WAS 7.840 ± .160		
2 DWG	REVISED DWG 2.520 WAS 2.554 R WAS 1.375 R 25.777 R WAS 25.737 R WAS .400 DIA		
3 DWG	REVISED DWG 3.000 DIA WAS 2.954 DIA		
4 DWG	REVISED DWG. SHEET 2 OF 5 ADDED SPLICE LINE DIM. WAS .850 BSI WAS .850 .671 WAS .500 .871 WAS .700 GIAL GAUGE DWG.		
5 DWG	REVISED DWG DELETED 1.025 FROM 2.40 DIMENSION ADDED GROUND ACID ETCH FORT. ADDED .470 DIA ADDED .500 R TO NECK 1.000 ± .007		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS IN INCHES
TOLERANCES—FRACTIONAL DEC. ±
DECIMAL .ONE ±
ANGLE ± MILLIM. ±

CODE 18340					
CES & EXP 1 SULS W/B J1-22 W/ RLAR					
DATE 3-7-68				OTHER DATA	
DRAWN WMS					
CHECK DW					
SCALE	REF. DWGS.	APPD.	DATE	DESIGN	REV.
CORNING GLASS WORKS				9054-5131	5

REF 47C 222840





DETAIL 'A'

	15							
	24							
4	23		HW42-04	NUT, CAPTIVE WSHR	#4-40			15453
4	22		MS51957-15	SCREW, PAN HEAD	#4-40 x .38			
1	21	D	7214-3021	DETECTOR, SIDE PROX				
1	20	D	7214-3018	C.A.J.E. ASSY.				
1	19	D	7214-3017	T-JOG, ACCEL				
1	18	D	7214-3020	DETECTOR, SIDE PROX				
1	17	D	7214-3019	DETECTOR, FOR. PROX				
1	16	D	7214-3016	SWIGGLY SWITCH ASSY				
REF	15		7214-3002	ELECTRICAL PARTS				
3	14		AN960C416L	WASHER				
6	13	B	7214-3015	WASHER				
9	12		HW42-6	NUT, CAPTIVE WSHR	#3/8-24			15453
5	11	B	7214-3014	BOLT				
4	10		HW42-02	NUT, CAPTIVE WSHR	#2-56			15453
4	9		AN505C2R4	SCREW, MACH CSKH	#2-56 x .25			
1	8	C	7214-2408	PLATE, IDENT				
1	7	D	7214-3010	FOOT SUP. ASSY				
1	6	D	7214-3009	SEAT SUP. ASSY				
1	5	D	7214-3008	BACK SUP. ASSY				
1	4	D	7214-3007	SHLDR SUP. ASSY				
1	3	C	7214-3004	KNOB				
1	2	D	7214-3011	BITE BOARD HOLDER				
1	1		7214-3001	HEAD REST				

LIST OF MATERIAL

7214-3000	J	7214-3000	1		SER NO. 001-002				

DRAWN	R.E. KESSLER	7/1/70	
CHECKED			
ENGR APPR.			
MFG APPR.			
PROJ ENGR			
QUAL APPR.			
CONTR APPR.			

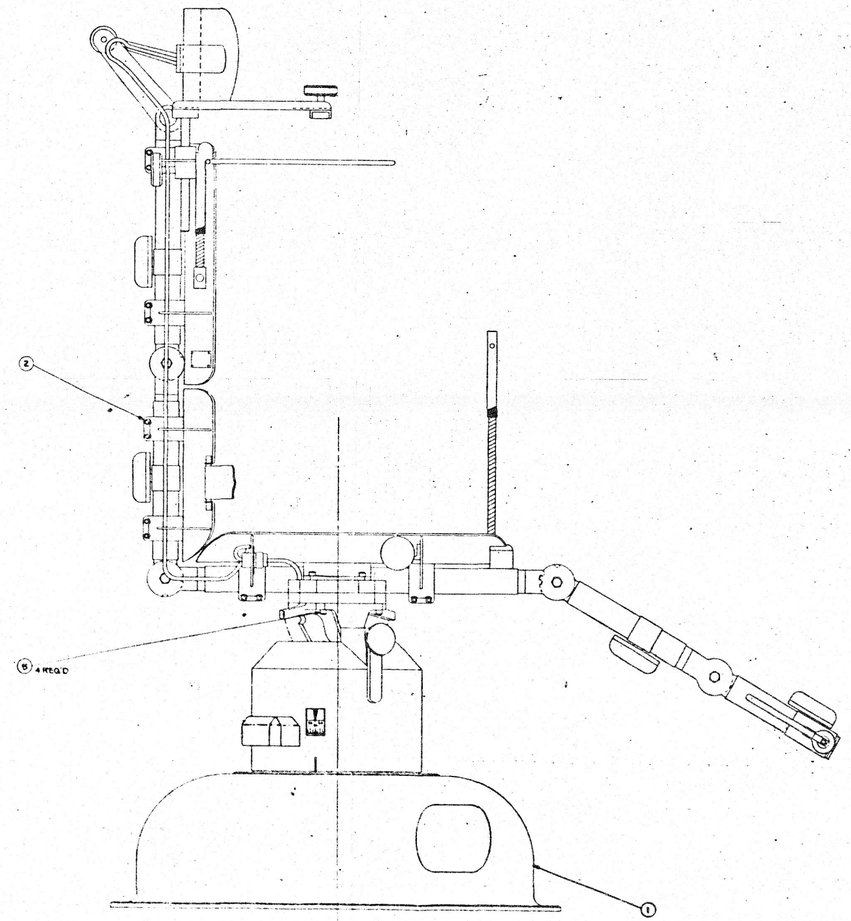
THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
SILVER SPRING, MARYLAND

ROTATING CHAIR ASSEMBLY
SKYLAB EXPERIMENT M131

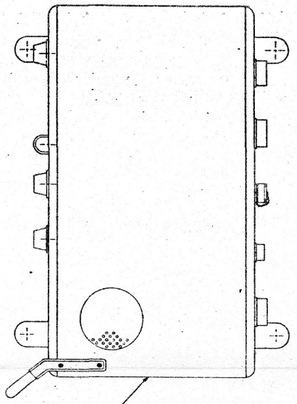
JOB NUMBER				REV
88898	J	7214-3000		A

SHEET 1/2

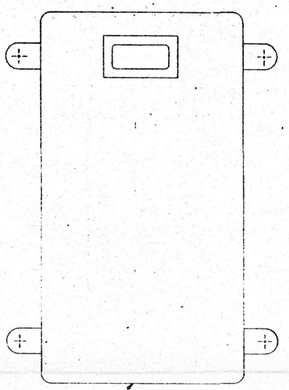
7214-3000



CHAIR AND BASE ASSEMBLY



CONTROL CONSOLE

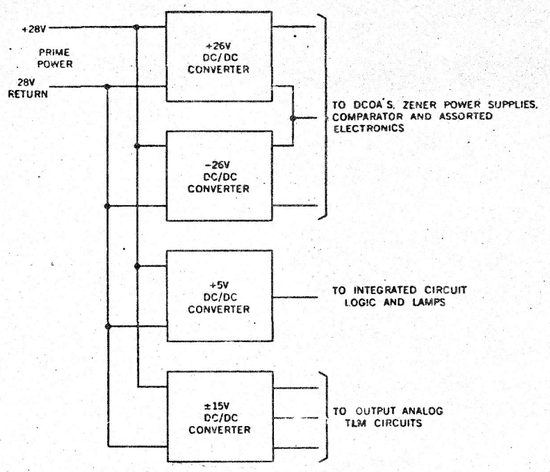


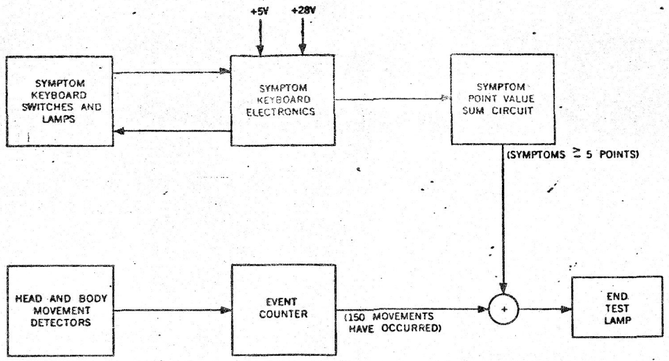
EQUIPMENT STORAGE

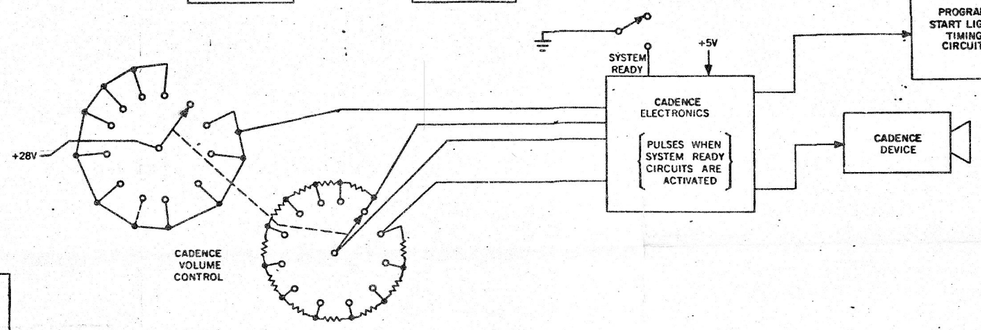
345

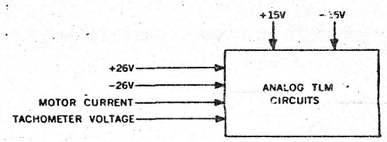
SKYLAB EXPERIMENT M131

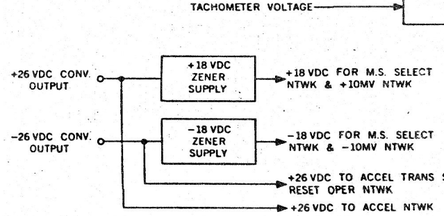
88898 | 7214-3000 | A

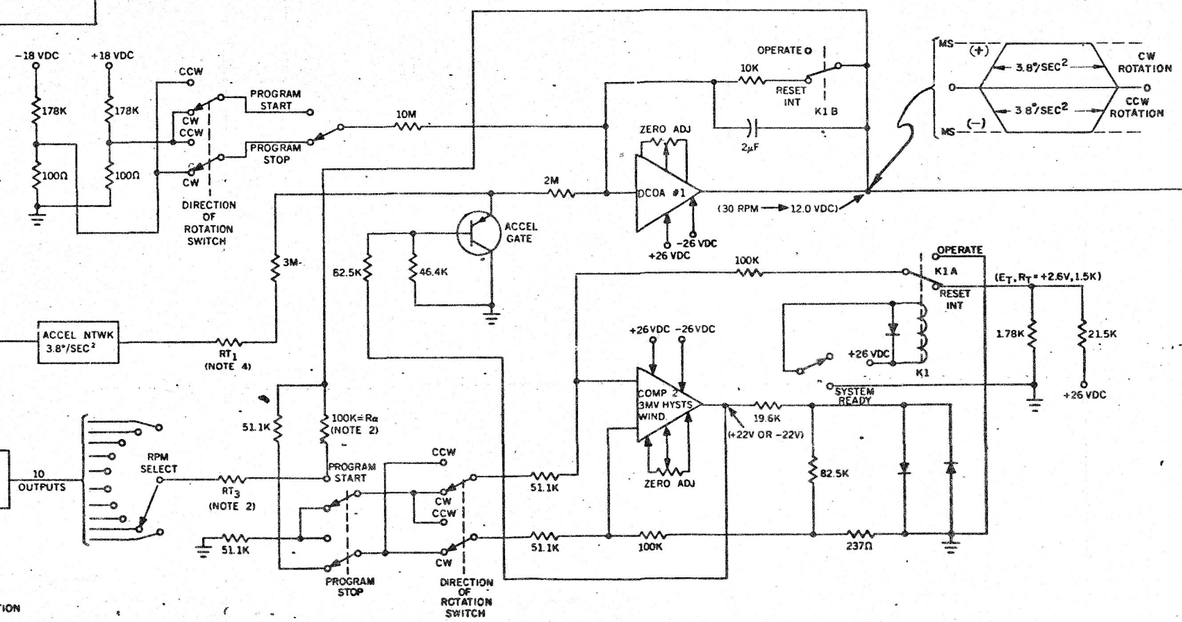


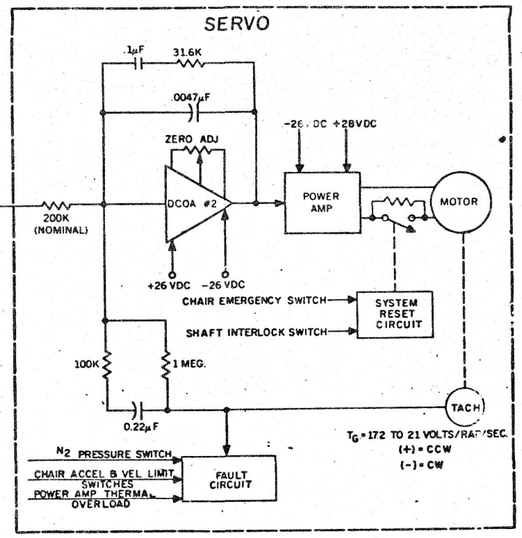












NOTE:

1. VELOCITY HOLD NETWORK HAS NEGATIVE FEEDBACK FOR CCW ROTATION AND POSITIVE FEEDBACK FOR CW ROTATION.
2. RT_3 IS SELECTED SUCH THAT $RT_3 = [R\alpha\ (ACTUAL) - 10.12K]$ WITHIN ±0.2%
3. HIGH FREQUENCY COMPENSATION FOR COMPARATOR IS NOT SHOWN
4. RT_1 IS SELECTED SUCH THAT CHAIR ACCELERATION IS 3.8°/SEC² +0.2°/SEC² −0.1°/SEC²
5. RESET CIRCUIT AND VOLTAGE LIMITERS FOR SERVO DCOA ARE NOT SHOWN.

7214-5004	7214-9000	REF	7214	—	—
PART NUMBER	NEXT ASSEMBLY	USED ON			WEIGHT

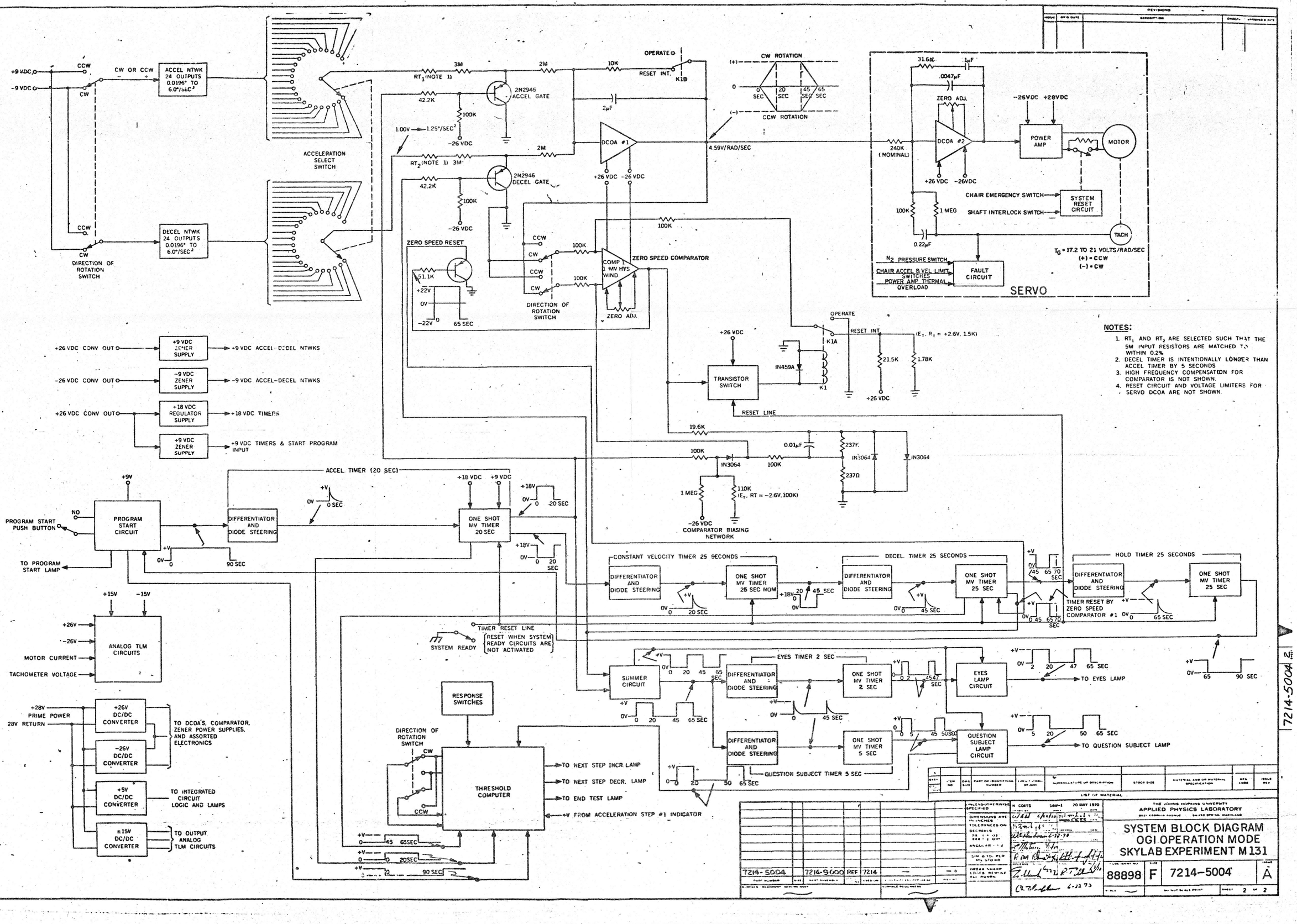
THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
8621 GEORGIA AVENUE SILVER SPRING, MARYLAND

SYSTEM BLOCK DIAGRAM MS OPERATION MODE SKYLAB EXPERIMENT M131

CODE IDENT NO.	SIZE	DRAWING NO.	REV
88898	F	7214 – 5004	A

SCALE — DO NOT SCALE PRINT SHEET 1 OF 2

7214-5004-1



NOTES:

1. RT_1 AND RT_2 ARE SELECTED SUCH THAT THE 5M INPUT RESISTORS ARE MATCHED TO WITHIN 0.2%
2. DECEL TIMER IS INTENTIONALLY LONGER THAN ACCEL TIMER BY 5 SECONDS
3. HIGH FREQUENCY COMPENSATION FOR COMPARATOR IS NOT SHOWN.
4. RESET CIRCUIT AND VOLTAGE LIMITERS FOR SERVO DCOA ARE NOT SHOWN.

REVISIONS			
NOTICE	DATE	DESCRIPTION	ENGR. APPROVED & DATE

LIST OF MATERIAL

ITEM NO	DOC SIZE	PART OR IDENTIFYING NUMBER	CIRCUIT SYMBOL OR DASH	NOMENCLATURE OR DESCRIPTION	STOCK SIZE	MATERIAL AND OR MATERIAL SPECIFICATION	MFG CODE	ISSUE REV

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON DECIMALS .XX ± .02, .XXX ± .010; ANGULAR ± .5°; SURFACE FINISH 250 MICRO INCH; BREAK SHARP EDGES REMOVE BURRS

7214-5004	7214-9000	REF	7214	—
PART NUMBER	SIZE	NEXT ASSEMBLY	USED ON	APPLICABLE SPECIFICATIONS

M COATS 5664-1 20 MAY 1970

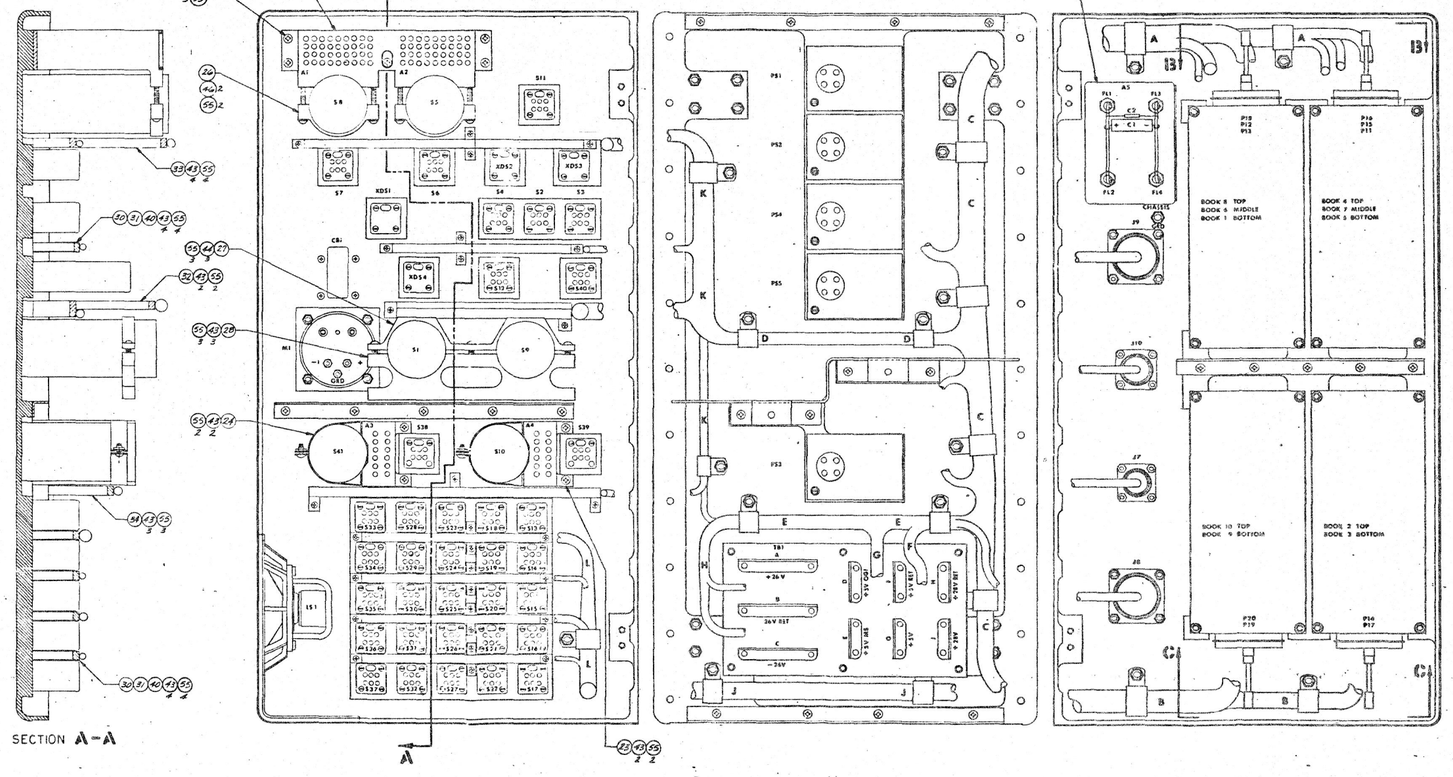
THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
8621 GEORGIA AVENUE SILVER SPRING, MARYLAND

SYSTEM BLOCK DIAGRAM OGI OPERATION MODE SKYLAB EXPERIMENT M 131

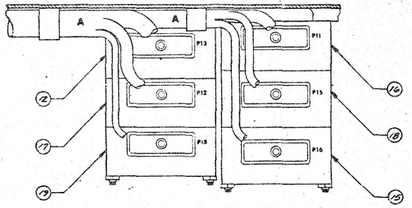
CODE IDENT NO	TYPE	DRAWING NO	ISSUE
88898	F	7214-5004	A

SCALE — DO NOT SCALE PRINT — SHEET 2 OF 2

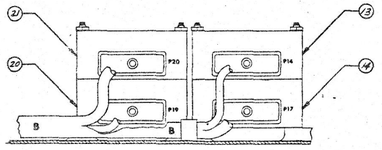
7214-5004 Sh 2



SECTION A-A



SECTION B-B



SECTION C-C

APPLIED PHYSICS LABORATORY

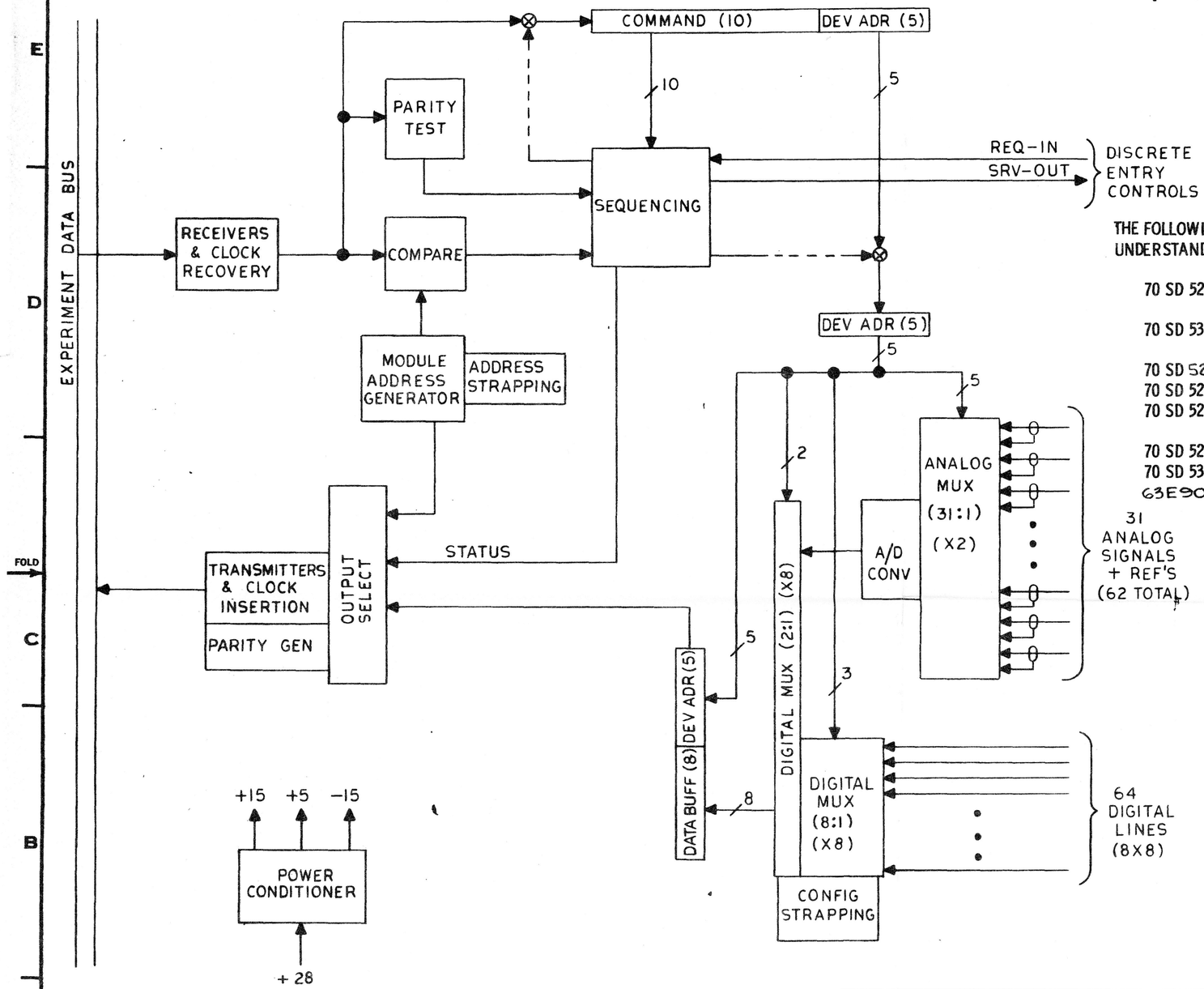
CONTROL CONSOLE
(HARNESS INSTALLATION)
SKYLAB EXPERIMENT M-131

88895 | J | 7214-5000 | A

7214-5000

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED



THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5288	REMOTE DATA CONTROL UNIT SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS)
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
63E901316	RDCU SCHEMATIC

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	12	10	70
CHECKED	12	10	70
ISSUED			
ENGR	19	10	70
MFG			
MATLS			

GENERAL ELECTRIC
APOLLO SYSTEMS DEPT LOC DAYTONA BEACH

IMBLMS DADS
DATA ACQUISITION UNIT (DAU)
MODULE OF RDCU

SIZE	CODE IDENT NO.	
C	16331	63C501930

SCALE NONE SHEET

PROJ CODE 7L

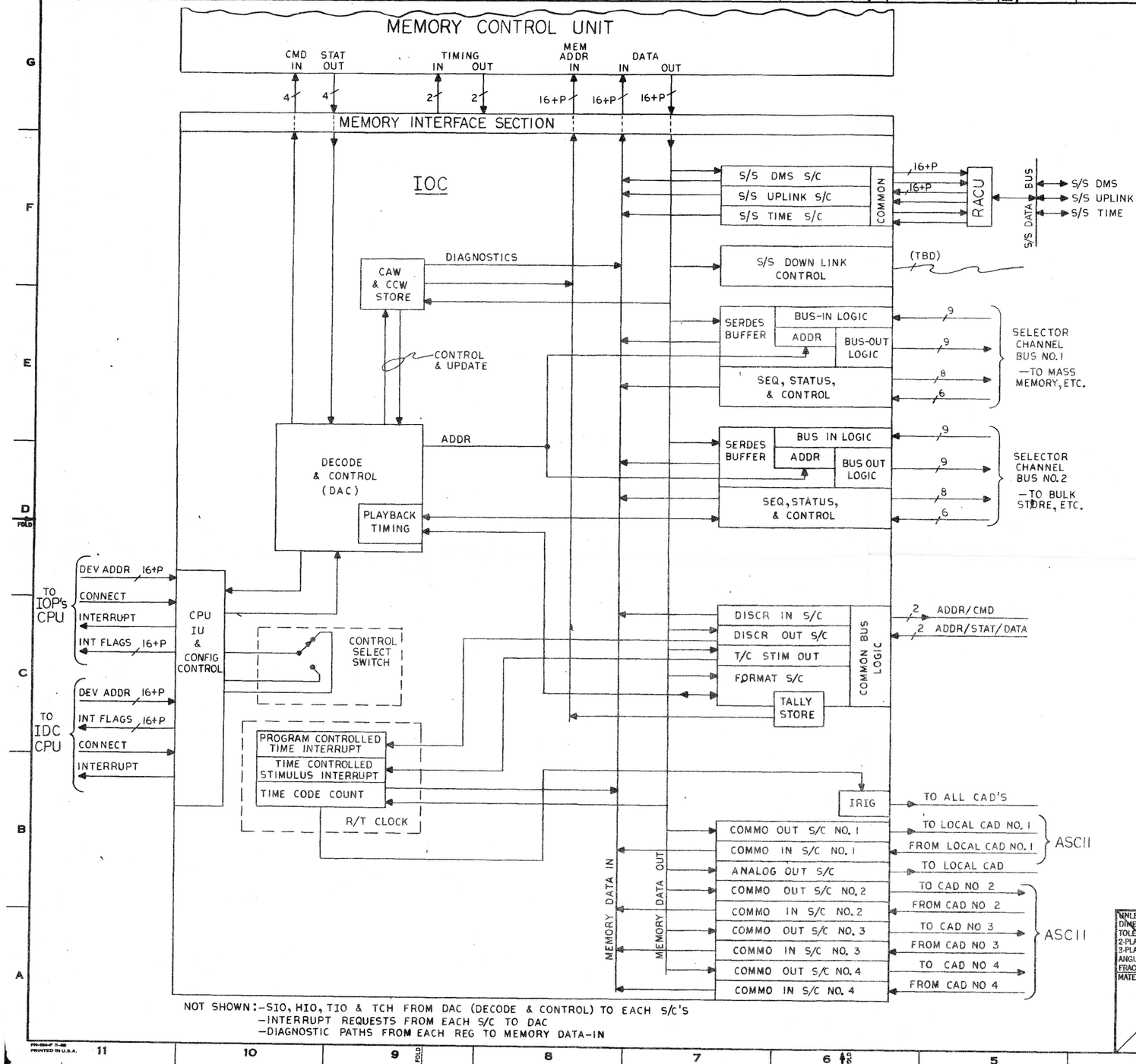
DIST TO IAI

SIZE C 63C501930 REV

FN 903-F (8-67)
PRINTED IN U.S.A.

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVED



THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE. DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5283	INPUT/OUTPUT CONTROLLER SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
63E901317	SCHEMATIC BLOCK DIAGRAM
63E901315	ASSEMBLY DWG.

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	14	10	70
CHECKED	15	10	70
ISSUED	23	10	70
MFG	19	10	70
MAYLE			

GENERAL ELECTRIC
APOLLO SYSTEMS DEPT LOC. DAYTONA BEACH

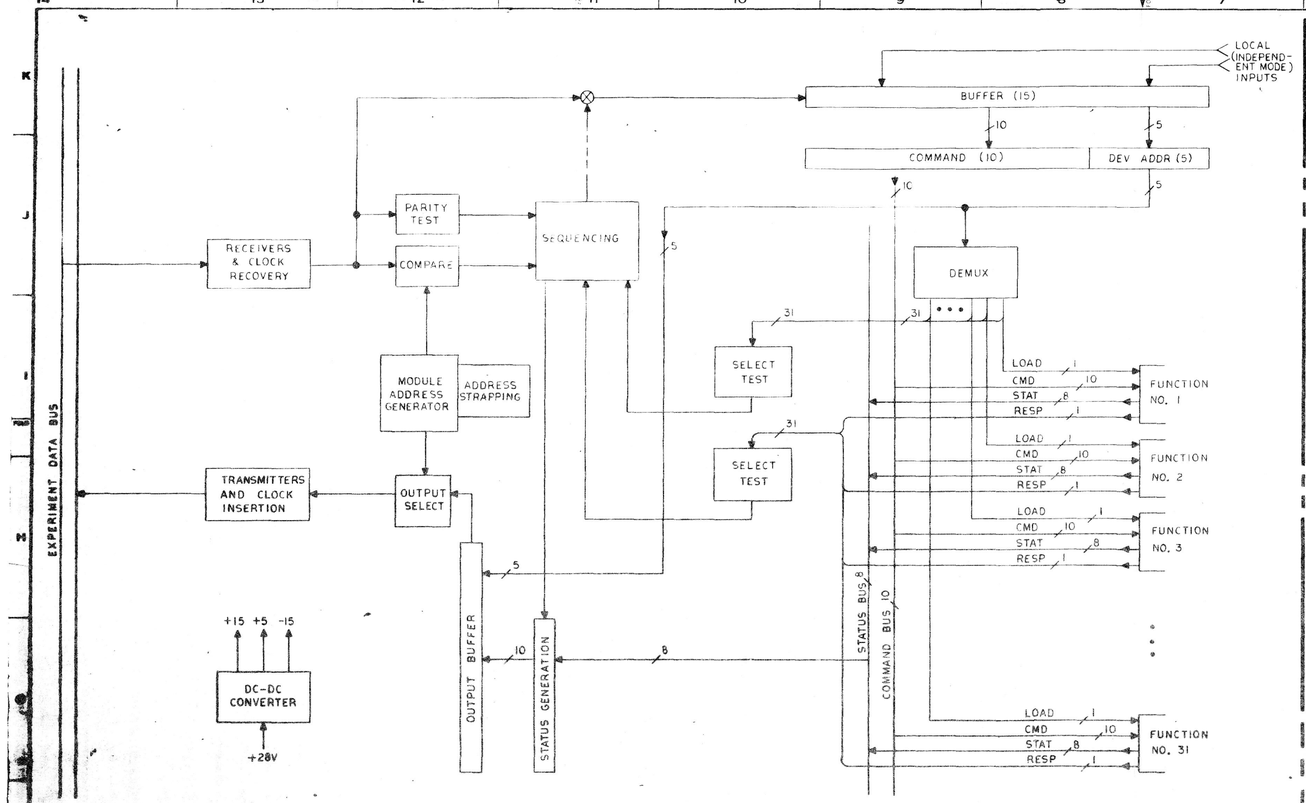
IMBLMS DADS
I/O CONTROLLER

SIZE	CODE IDENT NO.	
D	16331	63D702035

SCALE NONE SHEET

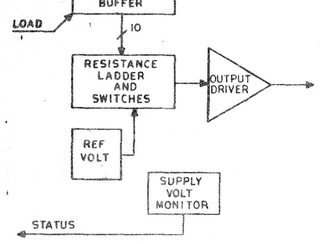
DIST TO: 1 A1

PRINTED IN U.S.A.

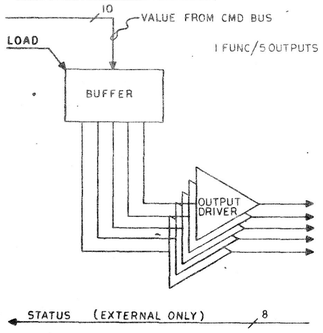


STIMULUS GENERATOR UNIT "BASEPLATE"

D/A FUNCTION



RELAY/LAMP DRIVER

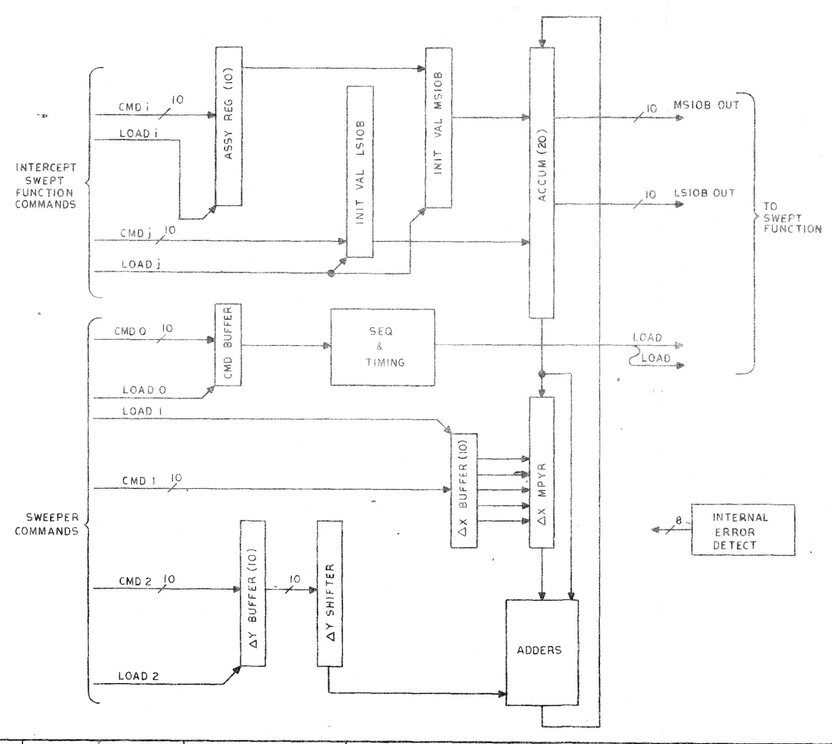


SWEEPER FUNCTIONS

$Y_{i+1} = Y_i(1 \pm \Delta x) \pm \Delta Y$

(1kc UPDATE RATE)

+3 FUNC/SWEEP

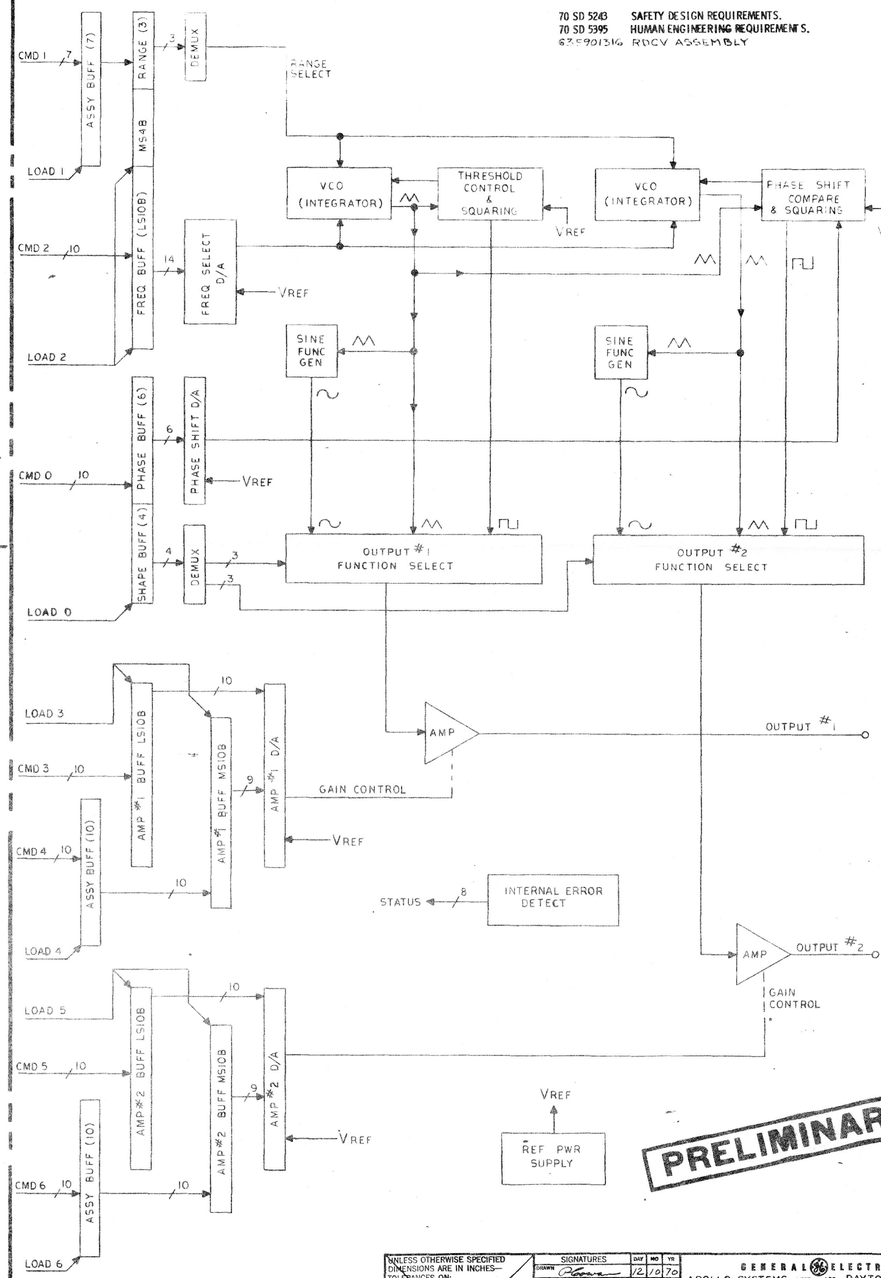


THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5288	REMOTE DATA CONTROL UNIT MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS)
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
63E901316	RDCV ASSEMBLY

PFG FUNCTIONS

1 FUNC/OUTPUT PAIR



PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	12	10	70
CHECKED	13	10	70
ISSUED	14	10	70
ENGR APPR			
MFG APPR			
QUALITY			

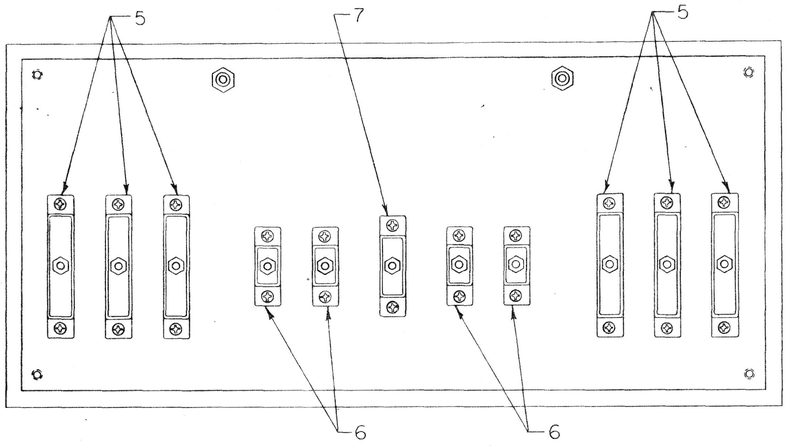
GENERAL ELECTRIC
APOLLO SYSTEMS DEPT. DAYTONA BEACH

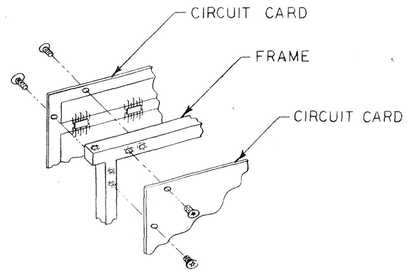
IMBLMS DADS
STIMULUS GENERATOR UNIT
MODULE SCHEMATICS

SIZE	CODE IDENT NO.	
E	16331	63E901314

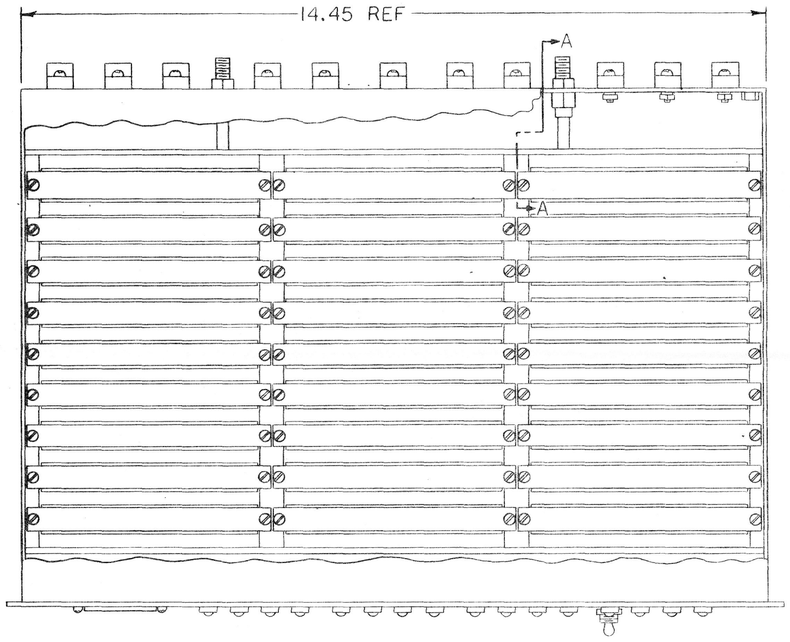
SCALE NONE

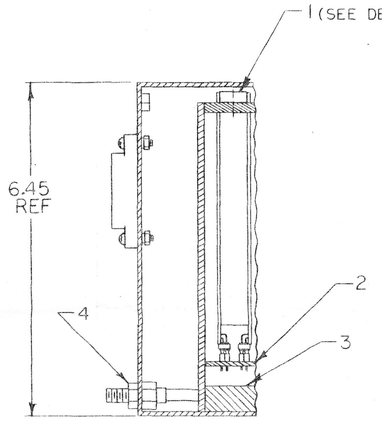
63E901314 REV E





DETAIL B
TYPICAL MODULE ASSEMBLY
(ITEM 1)

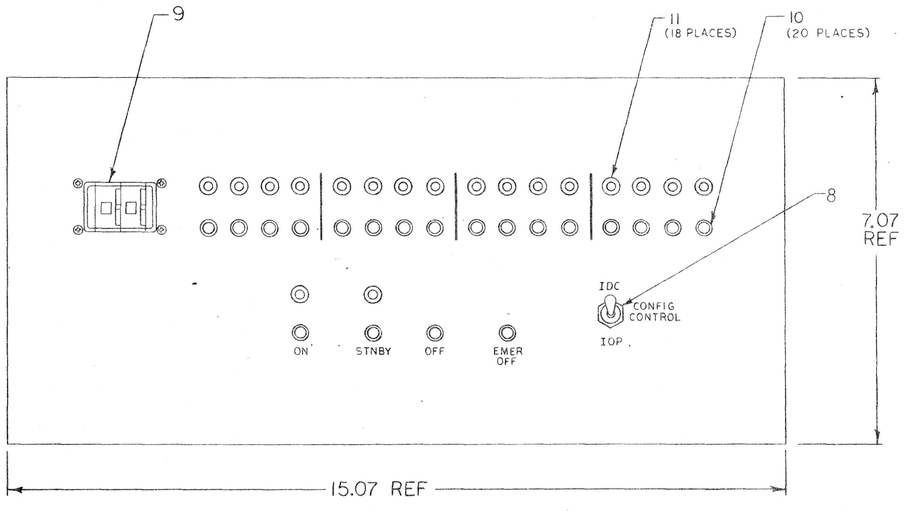




SECTION A-A

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 52283	INPUT/OUTPUT CONTROLLER MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS)
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.



VENDOR NOTES

A. HUGHES AIRCRAFT CO.,
NEWPORT BEACH, CALIF

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	REMARKS
			X		X	SCHEMATIC BLK DIAG.	
			X		X	I/O CONTROLLER	
			18		11	INDICATOR	
			20		10	SWITCH, PUSHBUTTON	
			1		9	SWITCH, THUMBWHEEL	
			1		8	SWITCH TOGGLE	
			1	W SERIES	7	CONNECTOR, 38 PIN	NOTE A
			4	W SERIES	6	CONNECTOR, 14 PIN	NOTE A
			6	W SERIES	5	CONNECTOR, 88 PIN	NOTE A
			2		4	TUBE FITTING	
			1		3	COLD PLATE	
			1		2	MOTHER BOARD	
			27		1	MODULE ASSEMBLY	

REQUIREMENTS FOR ASSY

LIST OF MATERIAL

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	26	10	70
CHECKED	28	10	70
ISSUED			
ENGR	28	10	70
MFG			
QUALITY			

GENERAL ELECTRIC
APOLLO SYSTEMS DEPT. LOC. DAYTONA BEACH

I/O CONTROLLER ASSEMBLY

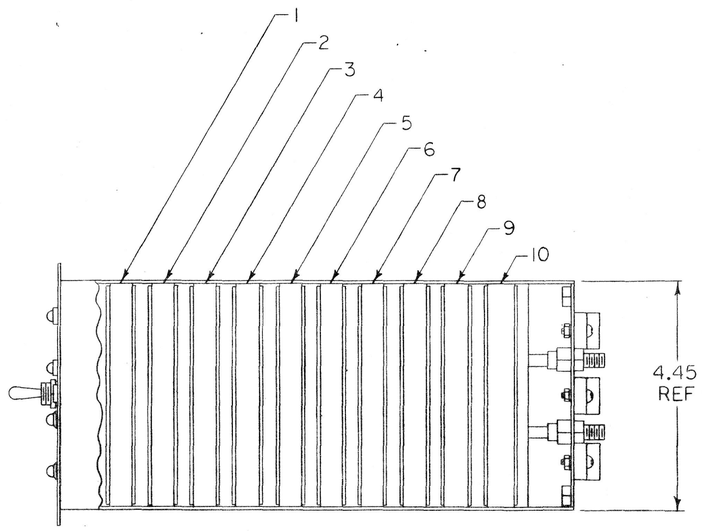
SIZE	CODE IDENT NO.	
E	16331	63E901315

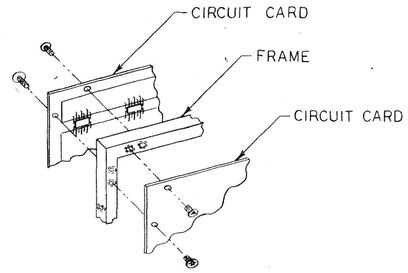
SCALE NONE SHEET —

DRAWING NO. 63E901315 REV

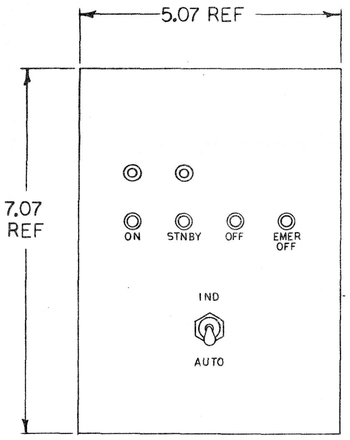
PRELIMINARY

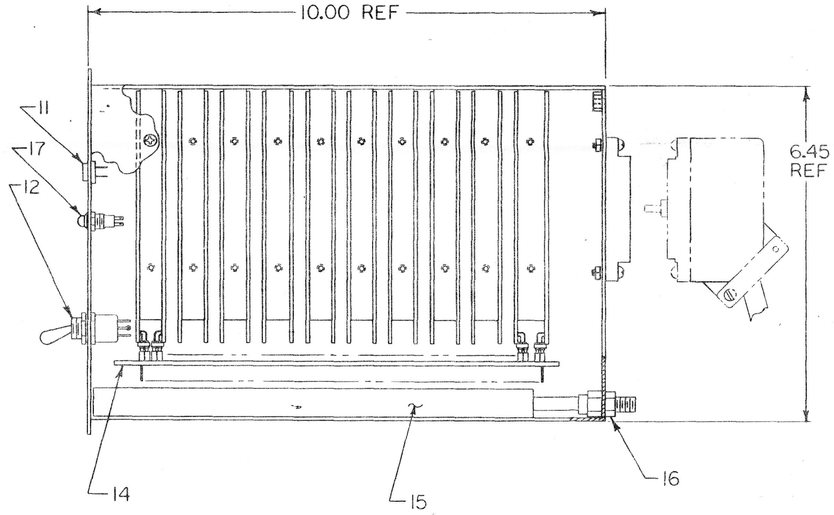
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

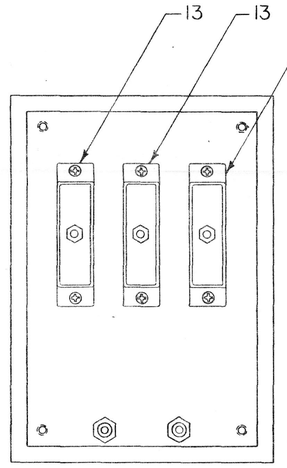




DETAIL A
TYPICAL MODULE ASSEMBLY







THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5288	REMOTE DATA CONTROL UNIT SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

G4	G3	G2	G1	IDENTIFICATION NO.	ITEM NO.	DESCRIPTION	REMARKS
			X	63E901314	19	UNIT MODULE SCHEMATICS	
		~	X	63C501930	18	UNIT MODULE OF R D C U	
			4		17	SWITCH, PUSH BUTTON	
			2		16	TUBE FITTING	
			1		15	COLD PLATE	
			1		14	MOTHER BOARD	
			3	WSS0132P00BN500	13	CONNECTOR	NOTE A
			2		12	INDICATOR	
			1		11	SWITCH, TOGGLE	
			1		10	MODULE ASSEMBLY	DETAIL A
			1		9	↕	↕
			1		8		
			1		7		
			1		6		
			1		5		
			1		4		
			1		3		
			1		2	↓	↓
			1		1	MODULE ASSEMBLY	DETAIL A

REQUIREMENTS FOR ASSY — LIST OF MATERIAL

VENDOR NOTES

A. HUGHES AIRCRAFT CO., NEWPORT BEACH, CALIF

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF.

SIGNATURES	DAY	MO	YR
DRAWN Rowan	9	10	70
CHECKED [illegible]	26	10	70
ISSUED [illegible]	26	10	70
APPR [illegible]	26	10	70
MFG			
RATED			

GENERAL ELECTRIC
APOLLO SYSTEMS DEPT LOC. DAYTONA BEACH

RDCU ASSEMBLY

SIZE	CODE IDENT NO.	
E	16331	63E901316

SCALE NONE

REV E 63E90316 REV E 63E90316 REV 316

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE	APPROVED

MEMORY INTERFACE SECTION

CMD IN · STATUS OUT · TIMING · SEQ · PARITY TEST · MEM ADDR IN · DATA IN · DATA OUT

CPU/IU
(CENTRAL PROCESSOR UNIT/INTERFACE UNIT)

TO IOP's CPU · INTERRUPT ARG (16) · SEQ · I/O CMD ARG (16) · CMD DECODE

TO IDC CPU · INTERRUPT ARG (16) · SEQ · I/O CMD ARG (16) · CMD DECODE

CONFIGURATION CONTROL SWITCH

DAC
DECODE & CONTROL SECTION

CAW/CCW SCRATCH PAD 48 BITS X 64 WDS · ADDR IN · DATA OUT · DATA IN

MASTER SEQUENCING · ±2 ±1 0 · CARRY · ADDER · SEL · ACCUMULATOR (48) · TEST & DECODE LOGIC

SERVICE EXCHANGE TO S/C · SPECIAL REQUEST FROM FORMAT CHANNEL · PLAYBACK TIMING FROM FORMAT S/C TO SELECTOR CHAN

MEMORY ADDRESS IN · MEMORY DATA IN · MEMORY DATA OUT

S/S DMS BUFFER · SEL · 16+P · TO RACU · FROM RACU

UPLINK BUFFER · DIAGNOSTICS

S/S TIME BUFFER · DIAGNOSTICS

ADDRESS IN · SEQ · ADDRESS OUT · FROM RACU · TO RACU · TO DAC

S/S DATA BUS CHANNEL

BUFFER (16 · 16 · 16) · XMITTERS & ? · (TBD) · TO S/S DOWNLINK

DIAGNOSTICS · SEQ & CONTROL · TO DAC

S/S DOWNLINK CHANNEL

SUMMER & LOW PASS FILTER · MODULATED OUTPUT

1KHz · ÷50 · 20Hz · PW CNT ÷10 · "0" · SET TO 3 · WP · RATE 2Hz · BIT SEL ÷5 · DIG SEL "11" ÷16 · EVEN · INHIB · IRIG-C · DC OUT (ALTERNATE)

REF · EQU · EQU · "1"

IRIG-C

4 MHz · ÷4000 · 1KHz · BIT COUNT ÷4 · DIGIT COUNT 16 · DECODE 11 8 7 6 4 · GO · MOD 6 LOGIC · MOD 24 LOGIC · ZERO SECONDS DETECT

SEQ & CONTROL · STATUS

RCVRS & PARITY TEST · BUS-IN · SERDES BUFFER · ADDR-IN · COMPARE · ADDR-OUT · SELECT · XMIT · BUS-OUT · SELECTOR CHANNEL BUS NO. 1

+28 V · STAND BY-OUT · STATUS (16) · SEQUENCING & CONTROL · ORDER & FLAGS · TO DAC · XMIT · TAG & SELECT-OUT · XMIT · TAG & SELECT-IN

SELECTOR CHANNEL NO. 1

ADDER · SEL · TIME CODE SR (48) · COMP · SEL · PROG CONTROLLED TIME-OF-INT (48) · COMP · SEL · TIME CONTROLLED STIM SR (48) · SELECT · SERDES BUFFER (16 · 16 · 16)

REAL TIME CLOCK

RCVRS & PARITY TEST · BUS-IN · SERDES BUFFER · ADDR IN · COMPARE · ADDR-OUT · SELECT · XMIT · BUS-OUT · SELECTOR CHANNEL BUS NO. 2

+28 V · STAND BY-OUT · STATUS (16) · SEQUENCING & CONTROL · ORDER & FLAGS · TO DAC · XMIT · TAG & SELECT-OUT · XMIT · TAG & SELECT-IN

SELECTOR CHANNEL NO. 2

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACTEND ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD	INPUT/OUTPUT CONTROLLER SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5299	MEASUREMENT REQUIREMENT SPECIFICATION (MRS)
70 SD 5283	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
63D702035	I/O CONTROLLER
63E901315	ASSEMBLY DWG.

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	22	10	70
CHECKED	23	10	70
ISSUED	23	10	70
ENGR APPR	23	10	70
MFG			
QUALS			

GENERAL ELECTRIC
APOLLO SYSTEMS DEPT. LOC. DAYTONA BEACH

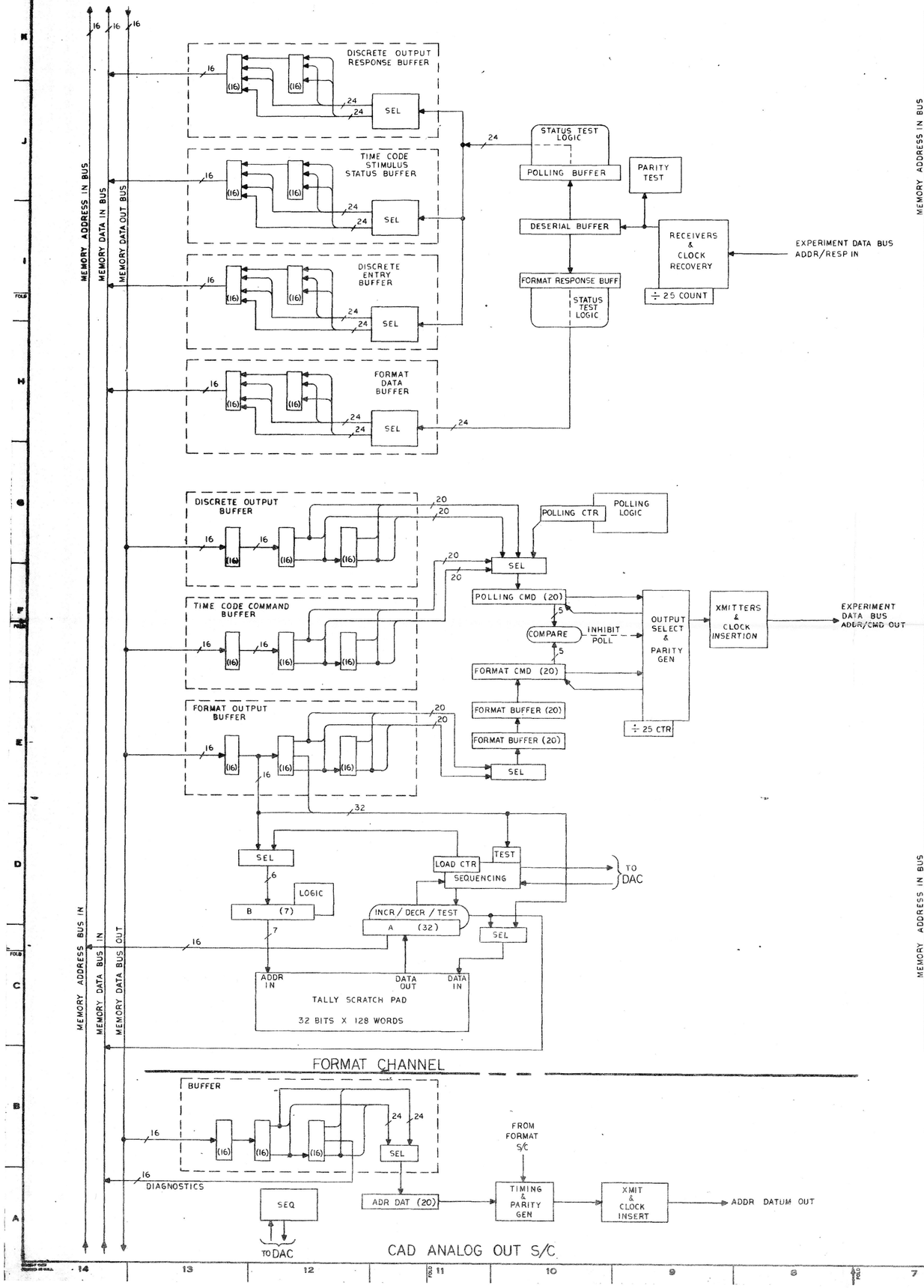
IMBLMS DADS
I/O CONTROLLER
SCHEMATIC BLOCK DIAGRAM

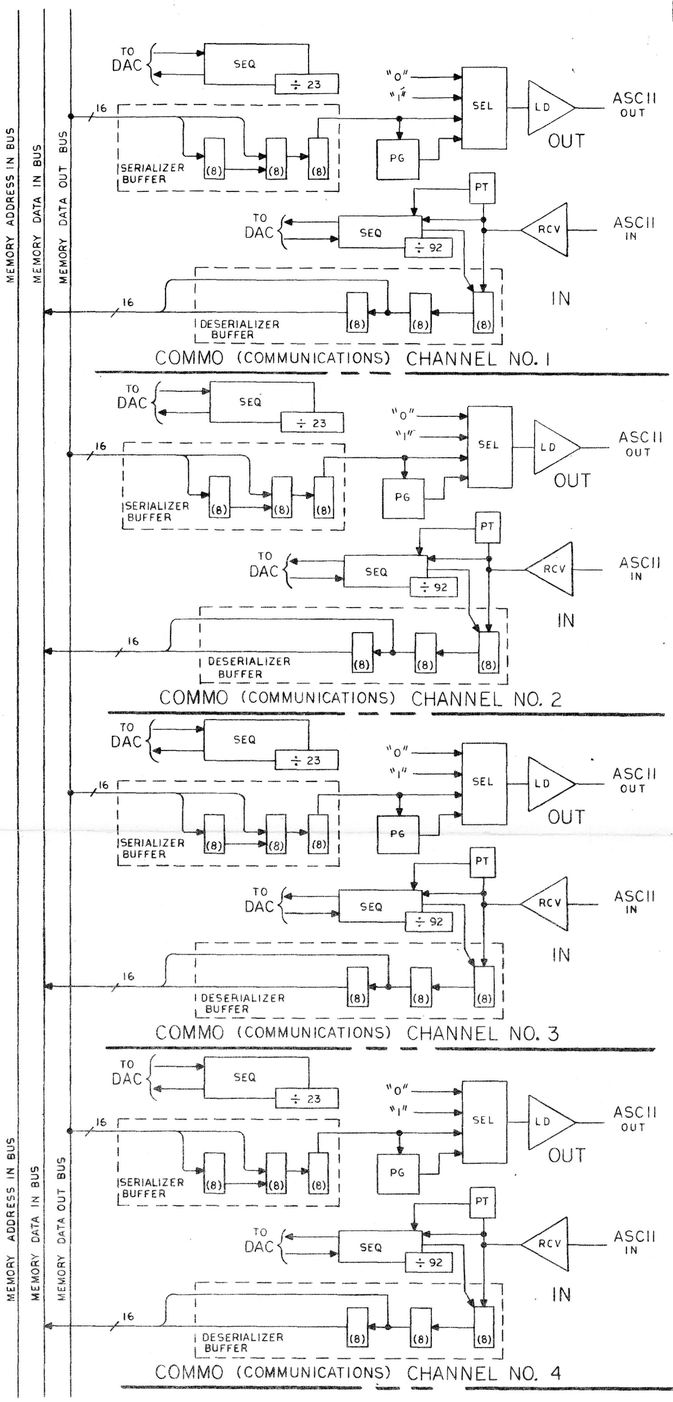
SIZE	CODE IDENT NO.	63E901317
E	16331	

SCALE NONE · SHEET 1 OF 2

63E901317 REV

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN	23	10	70
CHECKED	23	10	70
ISSUED	23	10	70
ENG	23	10	70
MFG			
TOOLS			

GENERAL ELECTRIC
APOLLO SYSTEMS DEPT LOC. DAYTONA BEACH

IMBLMS DADS I/O CONTROLLER SCHEMATIC BLOCK DIAGRAM

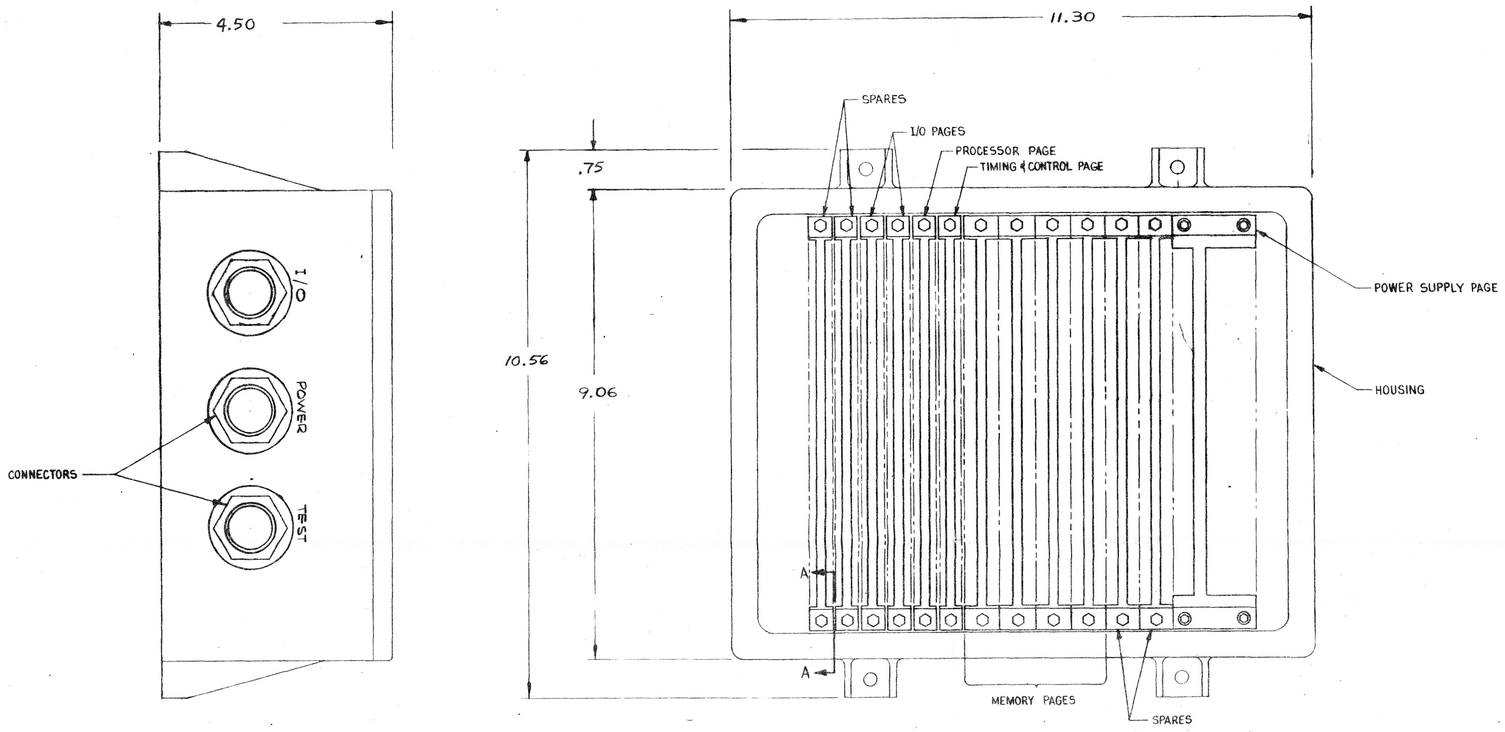
SIZE	CODE IDENT NO.	63E901317
E	16331	

SCALE NONE SHEET 2 OF 2

63E901317 REV E
63E901317 REV E

SOURCE OF SUPPLY				DRAWING NO.	
VENDOR	VENDOR ADDRESS	VENDOR CODE	VENDOR CAT. OR P.N.	70-225-103	
				SHEET	REV

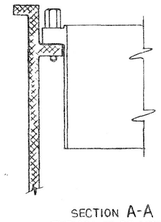
REVISIONS				
ENGINEERING NOTICE	LTR	DESCRIPTION	DATE	APPROVED



THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5285	MICRO PROCESSOR SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY



SECTION A-A
TYPICAL PAGE MOUNTING

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

QTY	PART NUMBER	DESCRIPTION	REMARKS
1		MEMORY PAGE 4	
1		MEMORY PAGE 3	
1		MEMORY PAGE 2	
1		MEMORY PAGE 1	
1		TIMING & CONTROL PAGE	
1		PROCESSOR PAGE	
1		I/O PAGE 2	
1		I/O PAGE 1	
3		CONNECTORS	
1		POWER SUPPLY PAGE	
1		HOUSING	

SPECIFICATION NUMBER AND TYPE	NOTE	ITEM NO.
APPLICABLE IBM SPECIFICATIONS	APPLIES TO	

☐ ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY VENDOR NAME(S), ADDRESS(ES), AND PART NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN ( ). A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM

☐ COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH (SEE SOURCE OF SUPPLY)

CHECK BLOCK ☒ IF APPLICABLE

IDENT. OF SYM: V-VENDOR ITEM
SEE SPEC OR SOURCE CONT DWG
R-REF QTY

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON 2 PLACE DEC ± 3 PLACE DEC ± ANGLES ±

MATL

HARD CASE DEPTH

SURF TREAT

CODE IDENT NO.

PREPARATION: B. Shelley 15 OCT 1970
DSGN CHK: 11-2-70
DRAWING CHECK: 11-2-70
DESIGN APPROVAL: W.R. Brun 11-2-70

INTERNATIONAL BUSINESS MACHINES CORP.
FEDERAL SYSTEMS DIVISION
ARMONK, NEW YORK 10504

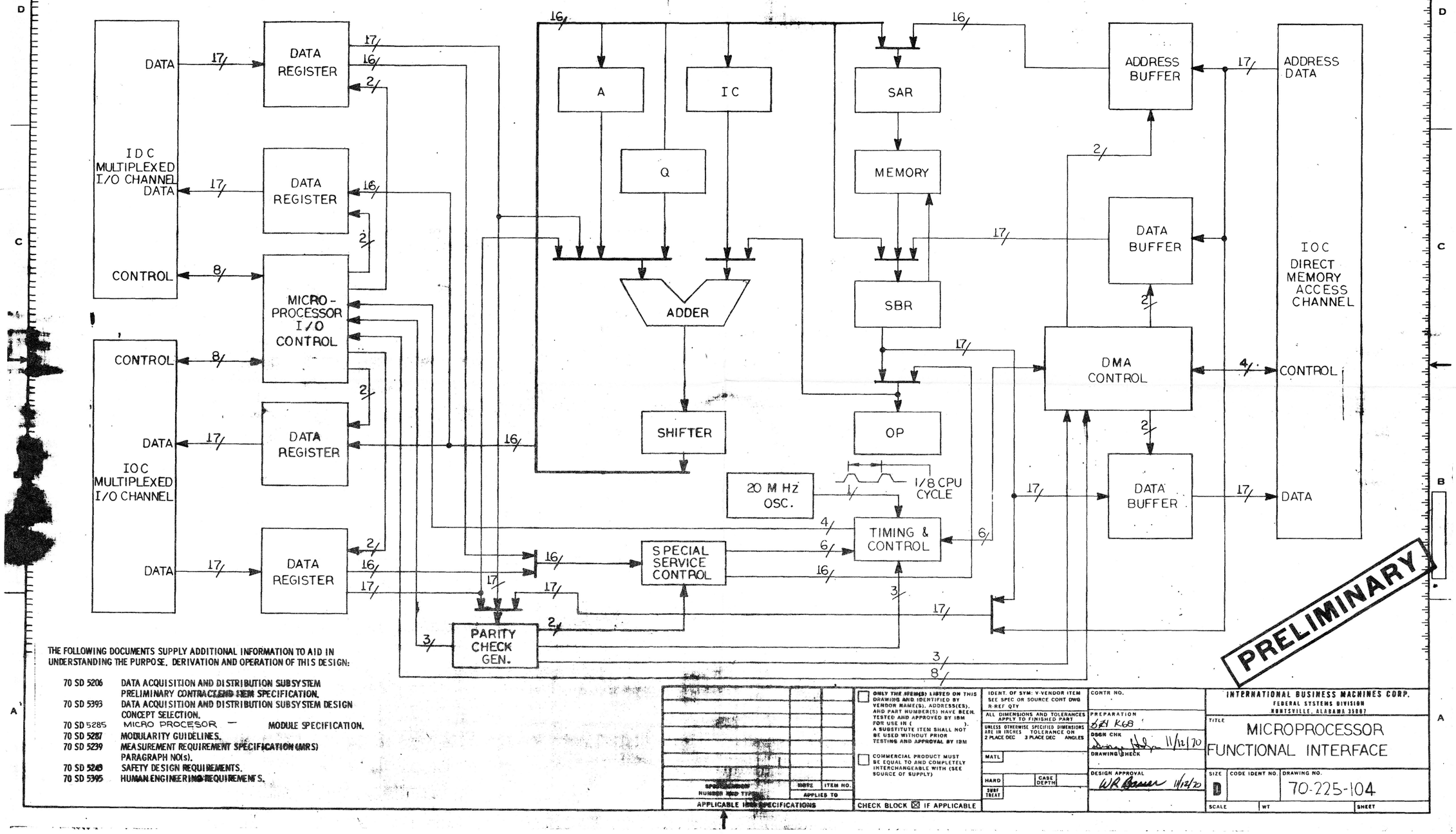
TITLE: MICRO PROCESSOR ASSY MECHANICAL INTERFACE

SIZE	CODE IDENT NO.	DRAWING NO.
F	20234	70-225-103

SCALE 1/1 WT SHEET

SOURCE OF SUPPLY

REVISIONS					
CHK	ENGRG NOTICE	LTR	DESCRIPTION	DATE	APPROVED



THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5285	MICRO PROCESOR — MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS) PARAGRAPH NO(s).
70 SD 5248	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

SPECIFICATION NUMBER AND TYPE	ISSUE	ITEM NO.	APPLIES TO
APPLICABLE IBM SPECIFICATIONS			

☐ ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY VENDOR NAME(S), ADDRESS(ES), AND PART NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN ( ). A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM

☐ COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH (SEE SOURCE OF SUPPLY)

CHECK BLOCK ☒ IF APPLICABLE

IDENT. OF SYM: V-VENDOR ITEM SEE SPEC OR SOURCE CONT DWG
R-REF QTY

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON 2 PLACE DEC 3 PLACE DEC ANGLES

MATL

HARD — CASE DEPTH

SURF TREAT

CONTR NO.

PREPARATION: SEI K68

DSGN CHK

DRAWING CHECK: 11/12/70

DESIGN APPROVAL: WR Brown 11/12/70

INTERNATIONAL BUSINESS MACHINES CORP.
FEDERAL SYSTEMS DIVISION
HUNTSVILLE, ALABAMA 35807

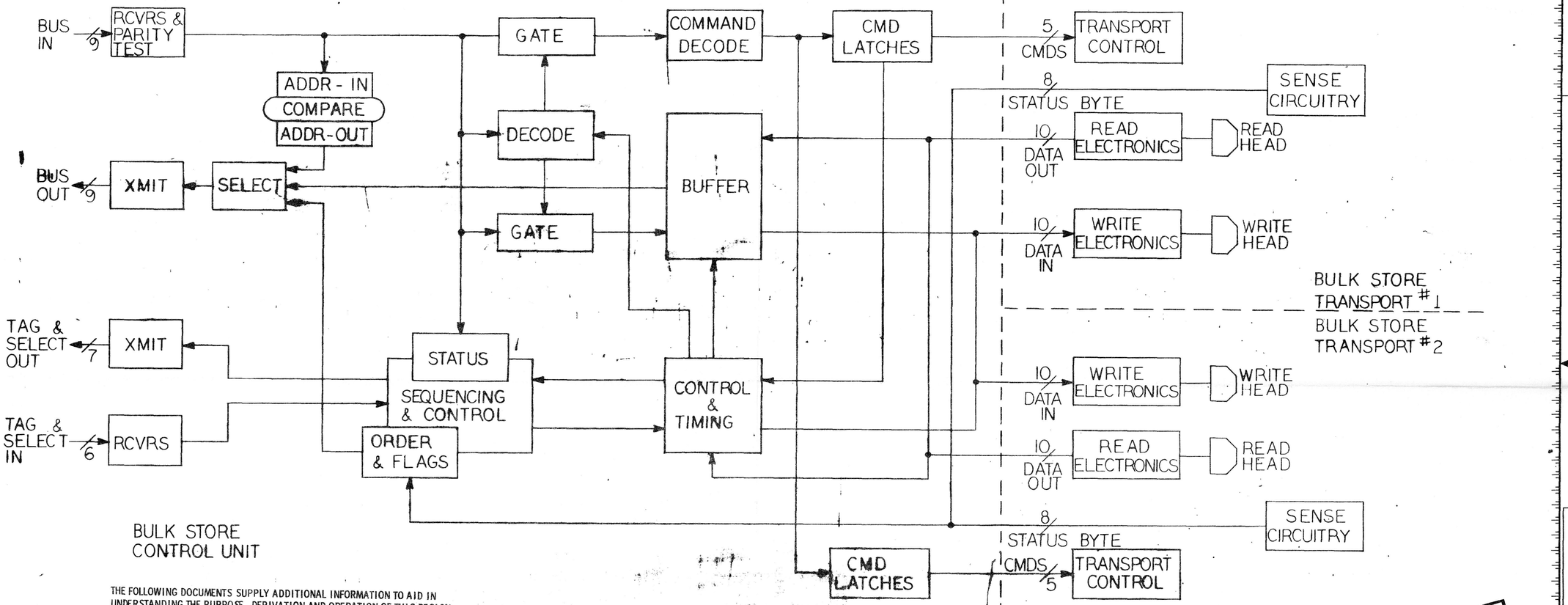
TITLE: MICROPROCESSOR FUNCTIONAL INTERFACE

SIZE	CODE IDENT NO.	DRAWING NO.
D		70-225-104

SCALE | WT | SHEET

SOURCE OF SUPPLY				DRAWING NO.
VENDOR	VENDOR ADDRESS	VENDOR CODE	VENDOR CAT. OR PN	SHEET / REV

REVISIONS				
CHK	ENGRG NOTICE LTR	DESCRIPTION	DATE	APPROVED



BULK STORE CONTROL UNIT

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5286	BULK STORAGE MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
02-101300-00	PL & ASSY.
70-225-200	ASSEMBLY DWG.
70-225-600	CONTROL UNIT ASSY.

PRELIMINARY

SPECIFICATION NUMBER AND TYPE	NOTE	ITEM NO. APPLIES TO
APPLICABLE IBM SPECIFICATIONS		

CHECK BLOCK ☒ IF APPLICABLE

☐ ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY VENDOR NAME(S), ADDRESS(ES), AND PART NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN ( ). A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM

☐ COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH (SEE SOURCE OF SUPPLY)

IDENT. OF SYM: V-VENDOR ITEM
SEE SPEC OR SOURCE CONT DWG
R-REF QTY

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON 2 PLACE DEC 3 PLACE DEC ANGLES

MATL

HARD / SURF TREAT / CASE DEPTH

CONTR NO.

PREPARATION 681 K68

DESGN CHK

DRAWING CHECK 11/12/70

DESIGN APPROVAL WR Barnes 11/12/70

INTERNATIONAL BUSINESS MACHINES CORP.
FEDERAL SYSTEMS DIVISION
HUNTSVILLE, ALABAMA 35807

TITLE
BULK STORE
SCHEMATIC BLOCK

SIZE	CODE IDENT NO.	DRAWING NO.
D		70-225-203

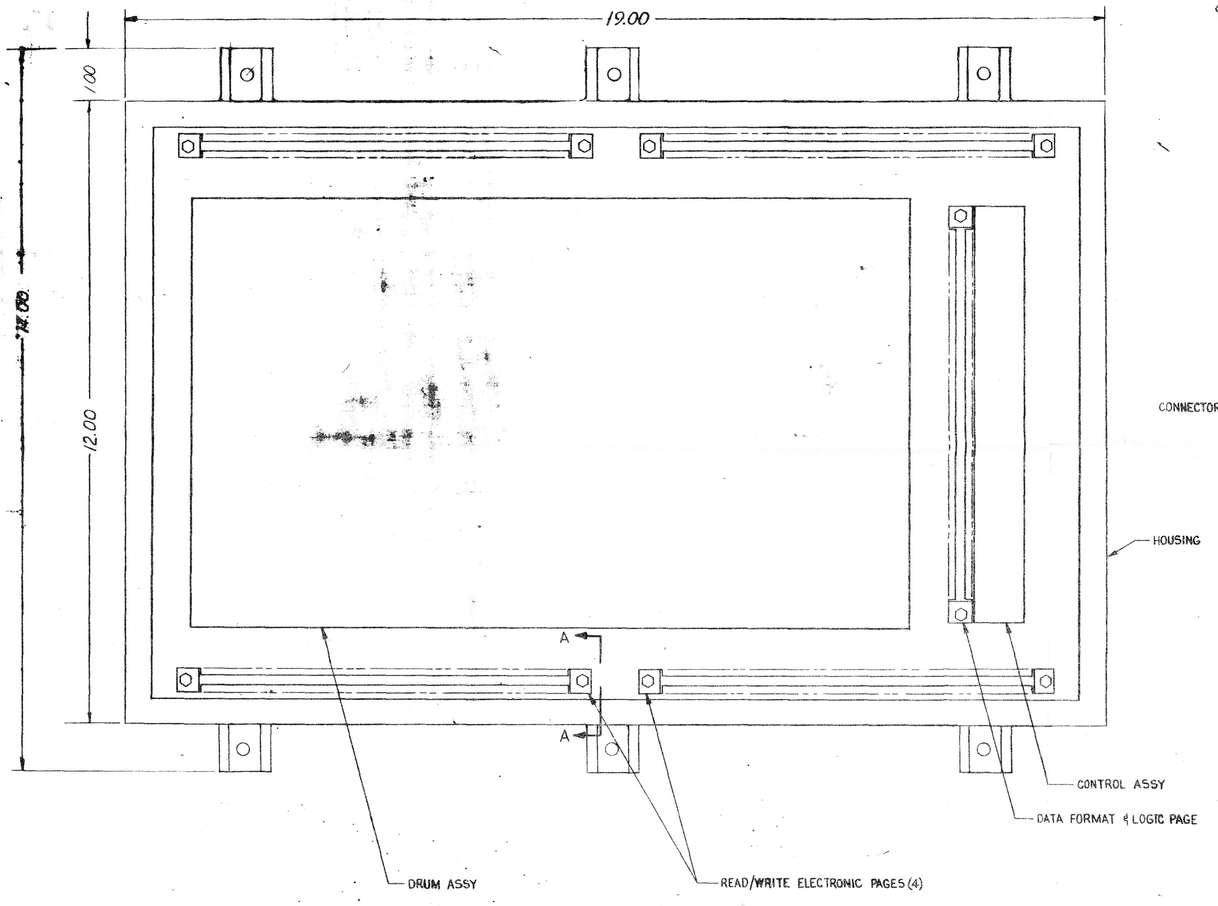
SCALE WT SHEET

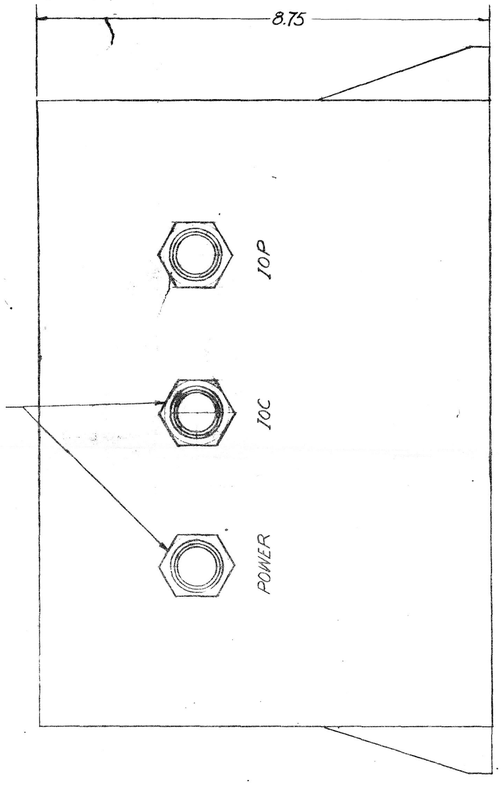
SOURCE OF SUPPLY			
VENDOR	VENDOR ADDRESS	VENDOR CODE	VENDOR CAT. OR P.N.

DRAWING NO.

SHEET REV

REVISIONS				
ECR ENGRG NOTICE	LTR	DESCRIPTION	DATE	APPROVED

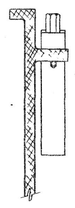




THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5291	MASS MEMORY MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5289	MEASUREMENT REQUIREMENT SPECIFICATION (MRS)
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY



SECTION A-A

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

QTY	PART NUMBER	DESCRIPTION	REMARKS
X	70-225-305	POWER UNIT ASSY.	
X	70-225-306	SCHEMATIC BLK. DIAG.	
4		READ/WRITE PAGES	
1		DRUM ASSY	
1		DATA FORMAT & LOGIC PAGE	
1		CONTROL ASSY	
3		CONNECTORS	
1		HOUSING	

SPECIFICATION NUMBER AND TYPE	NOTE	ITEM NO. APPLIES TO
APPLICABLE IBM SPECIFICATIONS		

CHECK BLOCK ☒ IF APPLICABLE

☐ ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY VENDOR NAME(S), ADDRESS(ES), AND PART NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN ( ). A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM

☐ COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH (SEE SOURCE OF SUPPLY)

IDENT OF SYM. V-VENDOR ITEM SEE SPEC OR SOURCE CONT DWG R-REF QTY

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON 2 PLACE DEC ± .01 3 PLACE DEC ± .005 ANGLES ±

MATL

HARD SURF TREAT CASE DEPTH

CONTR NO.

PREPARATION Ernie Ott Oct 23, 70

DRAFTSMAN

DRAWING CHECK 11-E-70

DESIGN APPROVAL W R Palmer 11-2-70

INTERNATIONAL BUSINESS MACHINES CORP.
FEDERAL SYSTEMS DIVISION
HUNTSVILLE, ALABAMA 35807

TITLE
MASS MEMORY MECHANICAL INTERFACE

SIZE E | CODE IDENT NO. 20234 | DRAWING NO. 70-225-300

SCALE 1/1 WT SHEET

SOURCE OF SUPPLY

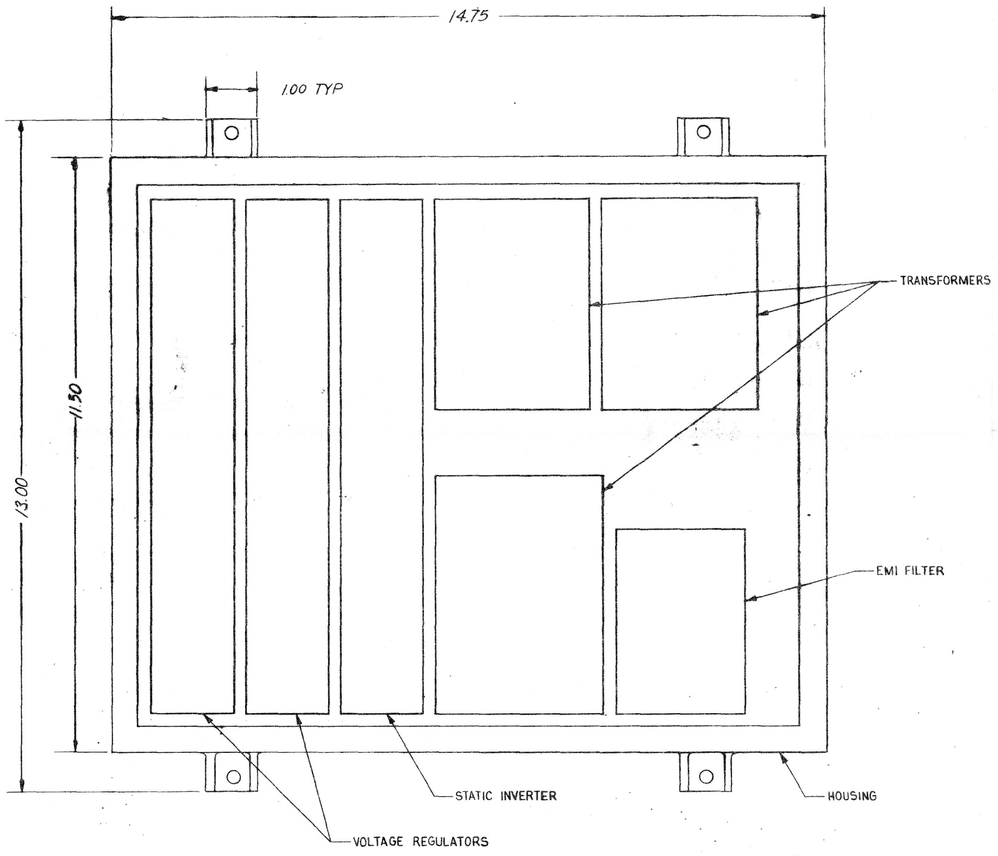
VENDOR	VENDOR ADDRESS	VENDOR CODE	VENDOR CAT. OR P.N.

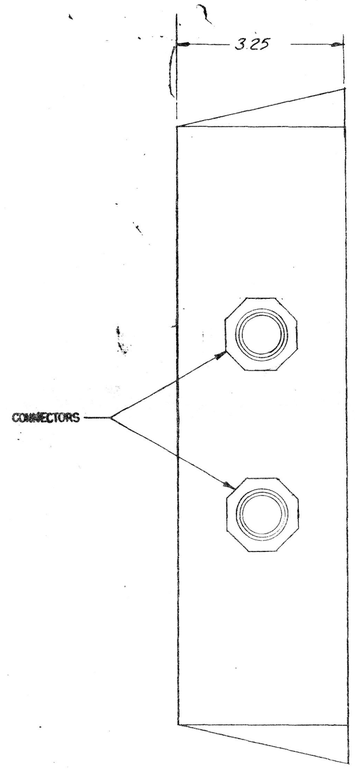
DRAWING NO. 70-225-305

SHEET REV

REVISIONS

CHG/ENGRG NOTICE	LTR	DESCRIPTION	DATE	APPROVED





THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5291	MASS MEMORY MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS)
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
70 225 300	ASSY DWG
70 225 306	SCHEMATIC BLOCK DIAG.

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

QTY	PART NUMBER	DESCRIPTION	REMARKS
1		VOLTAGE REGULATOR 2	
1		VOLTAGE REGULATOR 1	
1		STATIC INVERTER	
1		EMI FILTER	
1		TRANSFORMER 3	
1		TRANSFORMER 2	
1		TRANSFORMER 1	
2		CONNECTORS	
1		HOUSING	

SPECIFICATION NUMBER AND TYPE	NOTE	ITEM NO. APPLIES TO
APPLICABLE IBM SPECIFICATIONS		

☐ ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY VENDOR NAME(S), ADDRESS(ES), AND PART NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN ( ). A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM

☐ COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH (SEE SOURCE OF SUPPLY)

CHECK BLOCK ☒ IF APPLICABLE

IDENT. OF SYM. V VENDOR ITEM SEE SPEC OR SOURCE CONT DWG R-REF QTY

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON 2 PLACE DEC 3 PLACE DEC ANGLES

MATL

HARD

SURF TREAT

CASE DEPTH

CONTR NO.

PREPARATION R Phillips Oct 26, 1970

DESIGN

DRAWING CHECK 11-2-70

DESIGN APPROVAL W R Bacon 11-2-70

INTERNATIONAL BUSINESS MACHINES CORP.
FEDERAL SYSTEMS DIVISION
HUNTSVILLE, ALABAMA 35807

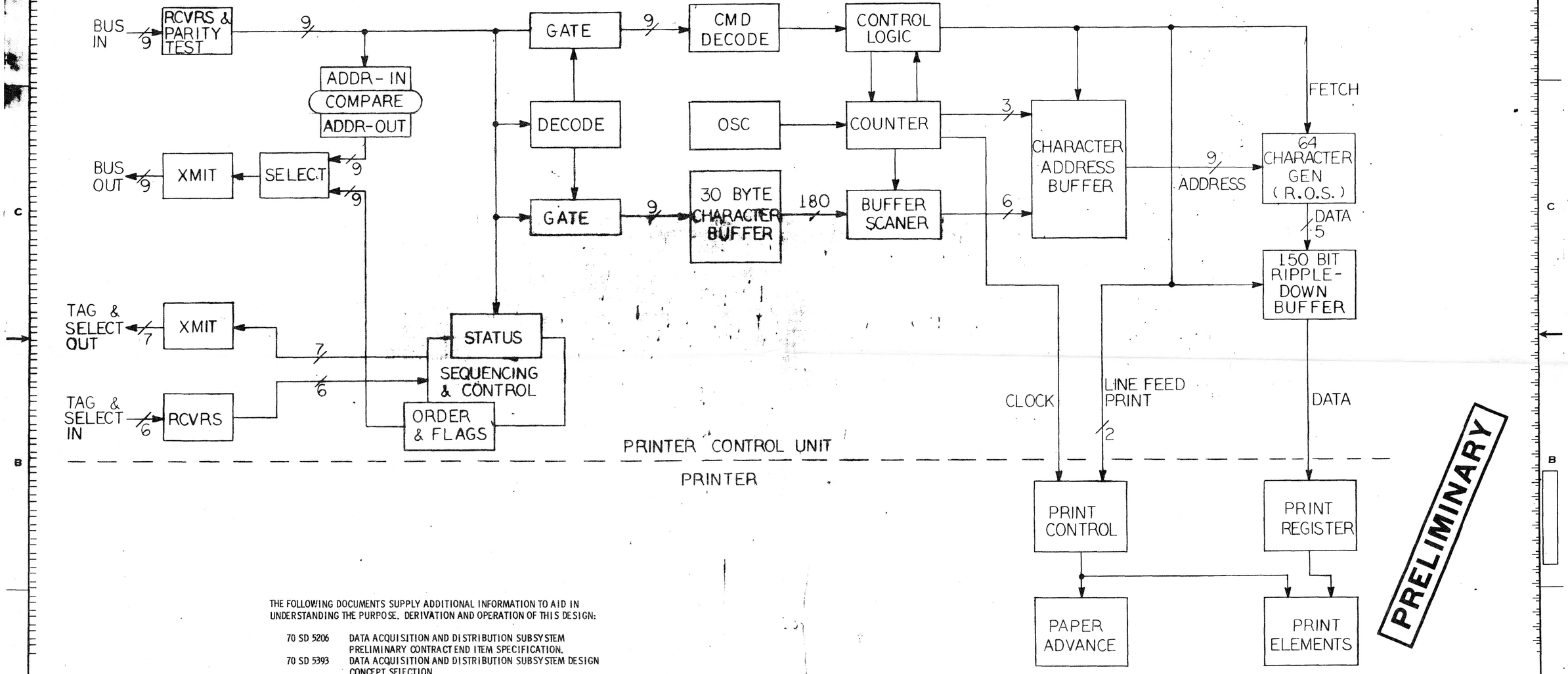
TITLE MASS MEMORY ASSY
POWER UNIT

SIZE	CODE IDENT NO.	DRAWING NO.
E	20234	70-225-305

SCALE: WT SHEET

SOURCE OF SUPPLY				DRAWING NO.
VENDOR	VENDOR ADDRESS	VENDOR CODE	VENDOR CAT. OR P/N	
				SHEET / REV

REVISIONS				
CHK	ENGRG NOTICE	LTR	DESCRIPTION	DATE	APPROVED



THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5371	PRINTER-OPTIONAL SPECIFICATION
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS)
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.
70-225-400	ASSEMBLY DWG.
2301000	TELEPRINTER ASSY.

APPLICABLE IBM SPECIFICATIONS		
SPECIFICATION NUMBER AND TYPE	NOTE	ITEM NO.
	APPLIES TO	

☐ ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY VENDOR NAME(S), ADDRESS(ES), AND PART NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN ( ). A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM

☐ COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH (SEE SOURCE OF SUPPLY)

CHECK BLOCK ☒ IF APPLICABLE

IDENT. OF SYM: V-VENDOR ITEM
SEE SPEC OR SOURCE CONT DWG
R-REF QTY

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON 2 PLACE DEC 3 PLACE DEC ANGLES

MATL

HARD | CASE DEPTH

SURF TREAT

CONTR NO.

PREPARATION K68 11/6/70

DSGN CHK

DRAWING CHECK 11/9/70

DESIGN APPROVAL W R Bauer 11/5/70

INTERNATIONAL BUSINESS MACHINES CORP.
FEDERAL SYSTEMS DIVISION
HUNTSVILLE, ALABAMA 35807

TITLE
PRINTER
SCHEMATIC BLOCK

SIZE	CODE IDENT NO.	DRAWING NO.
D		70-225-403

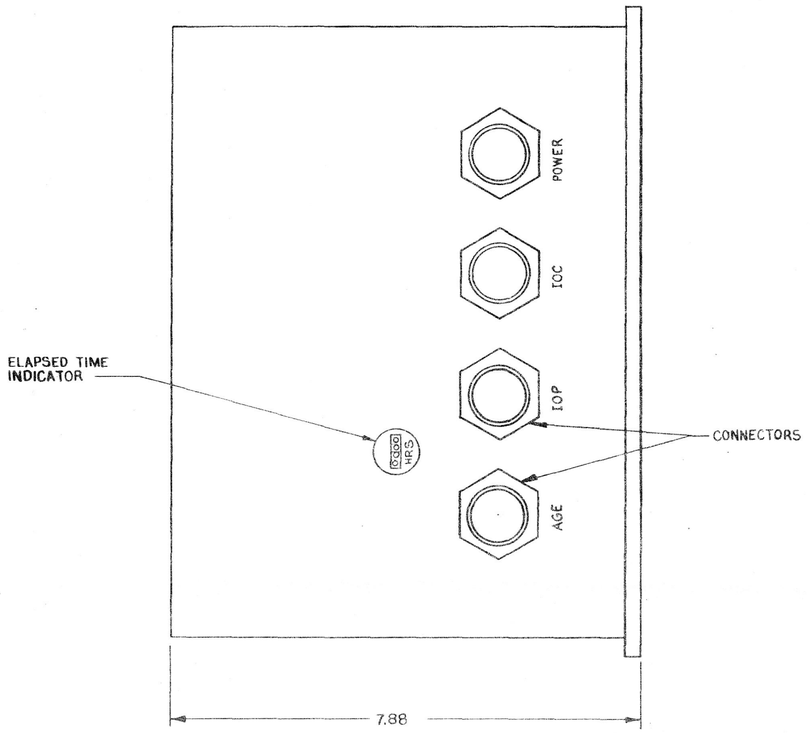
SCALE | WT | SHEET

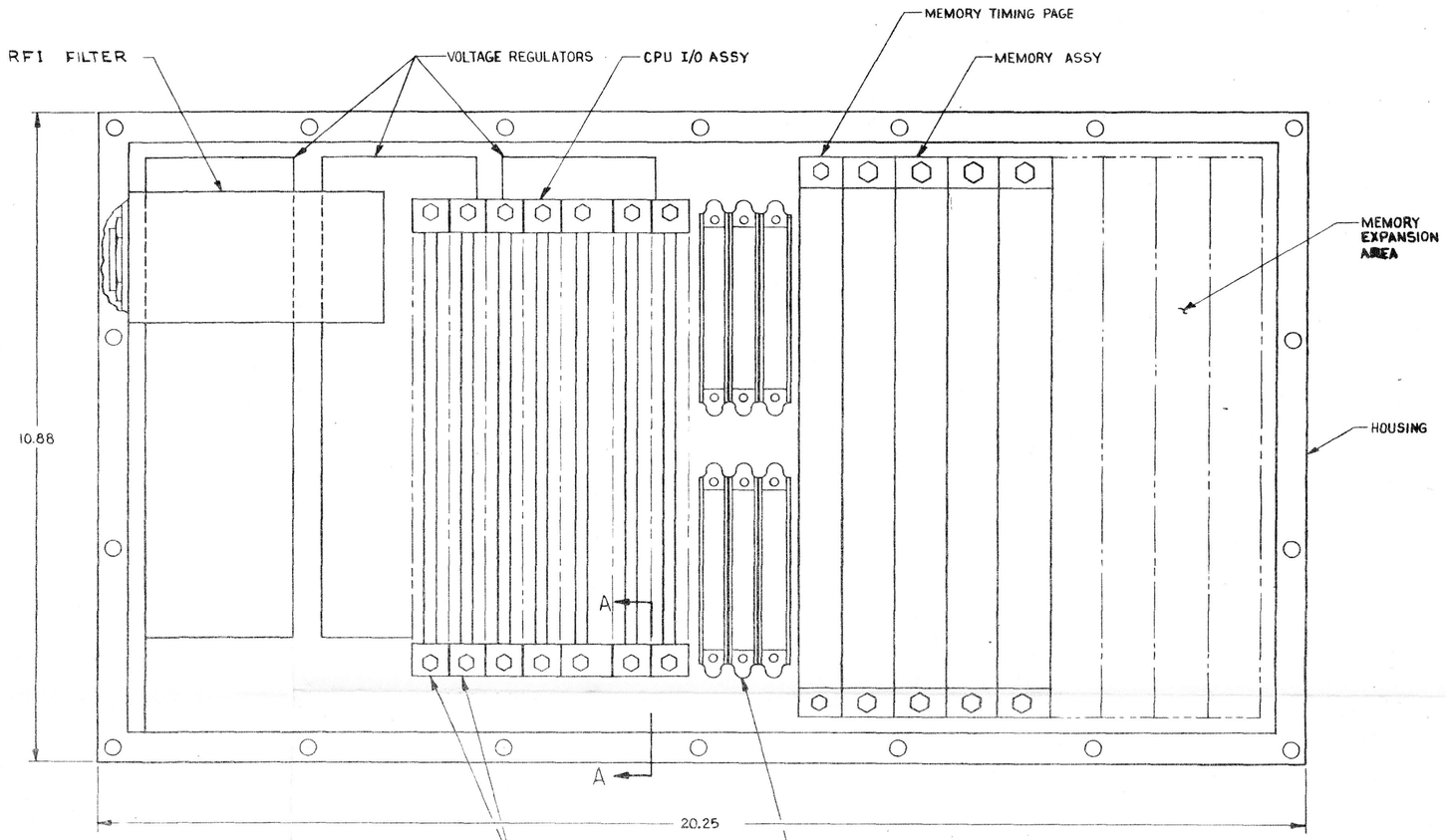
SOURCE OF SUPPLY			
VENDOR	VENDOR ADDRESS	VENDOR CODE	VENDOR CAT. OR PN

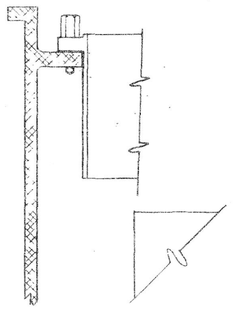
DRAWING NO.

SHEET | REV

REVISIONS					
CHK	ENGRG NOTICE	LTR	DESCRIPTION	DATE	APPROVED







SECTION A-A
TYPICAL PAGE MOUNTING

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5256	COMPUTER SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5394	COMPUTER SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5305	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

QTY	PART NUMBER	DESCRIPTION	REMARKS
1		VOLTAGE REGULATOR 3	
1		VOLTAGE REGULATOR 2	
6		P.C. CONNECTORS	
1		ELAPSED TIME IND	
5		CONNECTORS	
1		RFI FILTER	
1		HOUSING	
1		MEMORY PAGE 4	
1		MEMORY PAGE 3	
1		MEMORY PAGE 2	
1		MEMORY PAGE 1	
1		MEMORY TIMING PAGE	
1		I/O PLUG PAGE 2	
1		I/O PLUG PAGE 1	
1		CPU PAGE 5	
1		CPU PAGE 4	
1		CPU PAGE 3	
1		CPU PAGE 2	
1		CPU PAGE 1	
1		VOLTAGE REGULATOR 1	

SPECIFICATION NUMBER AND TYPE	NOTE	ITEM NO.
	APPLIES TO	
APPLICABLE IBM SPECIFICATIONS		

☐ ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY VENDOR NAME(S), ADDRESS(ES), AND PART NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN ( ). A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM

☐ COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH (SEE SOURCE OF SUPPLY)

CHECK BLOCK ☒ IF APPLICABLE

IDENT. OF SYM: V-VENDOR ITEM
SEE SPEC OR SOURCE CONT DWG
R-REF. QTY

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON 2 PLACE DEC 3 PLACE DEC ANGLES

MATL

HARD | CASE DEPTH

SURF TREAT

CONTR NO.

PREPARATION: R.D. Darnell 11/4/70

DSGN CHK: R.P. Mowbray 11/2/70

DRAWING CHECK: 11-2-70

DESIGN APPROVAL: W.R. Baum 11-2-70

INTERNATIONAL BUSINESS MACHINES CORP.
FEDERAL SYSTEMS DIVISION
ARMONK, NEW YORK 10504

TITLE: COMPUTER ASSY MECHANICAL INTERFACE

SIZE	CODE IDENT NO.	DRAWING NO.
F	20234	70-225-503

SCALE 1/1 | WT | SHEET 1 OF 2

DISTRIBUTION NO. 127 - GRAPHICS

SOURCE OF SUPPLY

VENDOR	VENDOR ADDRESS	VENDOR CODE	VENDOR CAT. OR PN	DRAWING NO.
				SHEET / REV

REVISIONS

CHK	ENGRG NOTICE	LTR	DESCRIPTION	DATE	APPROVED

R/W
DECODE
SA CHANNEL SELECTOR
SAR 12
STB
TCV
4/
Y CHIP SELECT DECODE
16/
16 Y DRIVER MODULES
36 4K SENSE SEGMENTS 2/BIT
256 Y ADDRESSES
17 SENSE AMPLIFIERS
PS
1/
DECODE
R/W
P/N
CORE MAT
DATA (18 BITS)
4/
16 X LINES & RETURN/DRIVER
Y TIMING
X TIMING
17 X DRIVER MODULES
R/W
X CHIP SELECT DECODE
XCS0
XCS17
XCS0 → XCS16
PS
R/W
STORAGE PAGE HIGH (2 REQD)

PS → ADVANCE
STB → SELECT
R/W → STORE
X TIMING → HALF WORD
Y TIMING → SPLIT CYCLE
TIMING GENERATOR
BUSY
13/
SAR
ADDRESS DATA
SAR LOAD CLOCK

TIMING PAGE

STORAGE PAGE LOW (2 REQD)

R/W
DECODE
SA CHANNEL SELECTOR
STB
TCV
1
4/
Y CHIP SELECT DECODE
16/
16 Y DRIVER MODULES
36 4K SENSE SEGMENTS 2/BIT
256 Y ADDRESSES
17 SENSE AMPLIFIERS
PS
1/
DECODE
R/W
P/N
CORE MAT
DATA (18 BITS)
4/
16 X LINES & RETURN/DRIVER
Y TIMING
X TIMING
17 X DRIVER MODULES
R/W
X CHIP SELECT DECODE
XCS0
XCS17
XCS0 → XCS16
PS
R/W

SDR LOW
PARITY LOW
AGE (SR)
SDR HIGH
PARITY HIGH
LOW WORD BUS
HIGH WORD BUS
DATA BUS
FROM AGE
TO AGE

STORAGE BUS CONTROL UNIT
CENTRAL PROCESSOR UNIT

C REGISTER HIGH
C REGISTER LOW
GENERAL REGISTER 8 X 32 BITS
NI REGISTER
PROGRAM CONTROL
SYSTEM MASK
O REGISTER
ADDRESS BUS
A REGISTER HIGH
A REGISTER LOW
B REGISTER HIGH
B REGISTER LOW
ARITHMETIC LOGIC UNIT

DATA (HIGH)
REGISTER (LOW)
17 DATA ADDRESS
IOC
ADDRESS+1 REGISTER
I/O CONTROL
CONTROL

DATA (HIGH)
REGISTER (LOW)
17 DATA ADDRESS
MICRO-PROCESSOR
ADDRESS+1 REGISTER
I/O CONTROL
CONTROL

INPUT/OUTPUT SECTION

PRELIMINARY

SPECIFICATION NUMBER AND TYPE	NOTE	ITEM NO.
APPLICABLE IBM SPECIFICATIONS	APPLIES TO	

☐ ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY VENDOR NAME(S), ADDRESS(ES), AND PART NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN ( ). A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM

☐ COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH (SEE SOURCE OF SUPPLY)

CHECK BLOCK ☒ IF APPLICABLE

IDENT. OF SYM: V-VENDOR ITEM SEE SPEC OR SOURCE CONT DWG R-REF QTY

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ± TOLERANCE ON 2 PLACE DEC 3 PLACE DEC ANGLES

MAT'L

HARD CASE DEPTH

SURF TREAT

CONTR NO.

PREPARATION WN K68

DSGN CHK

DRAWING CHECK 11/11/75

DESIGN APPROVAL W.R. Bacon 11/12/75

INTERNATIONAL BUSINESS MACHINES CORP.
FEDERAL SYSTEMS DIVISION
ARMONK, NEW YORK 10504

TITLE
IMBLMS DIGITAL COMPUTER FUNCTIONAL INTERFACE DIAGRAM

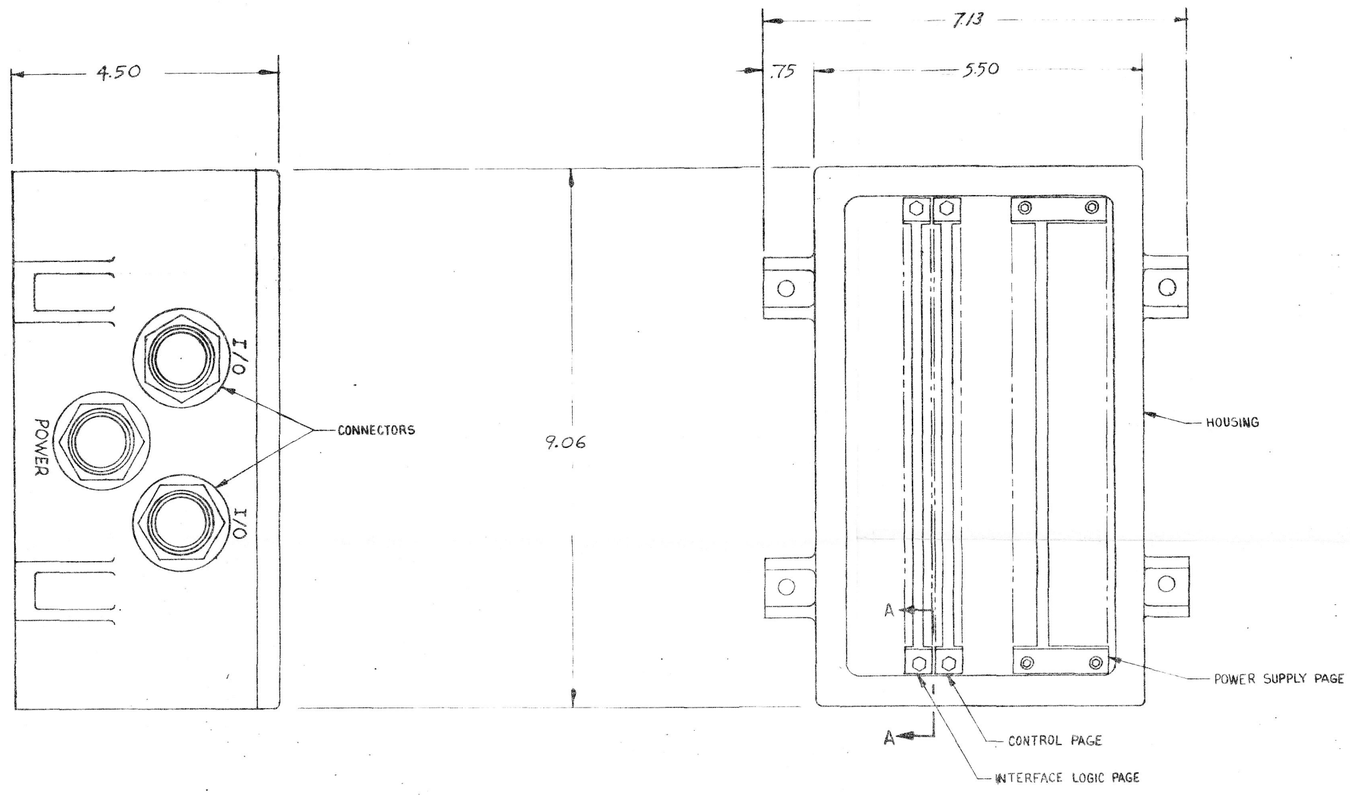
SIZE	CODE IDENT NO.	DRAWING NO.
F	20234	70-225-503

SCALE WT SHEET 2 OF 2

SOURCE OF SUPPLY			
VENDOR	VENDOR ADDRESS	VENDOR CODE	VENDOR CAT. OR P/N

DRAWING NO. 70-225-602
SHEET REV

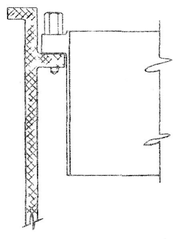
REVISIONS				
CHK	ENGRG NOTICE	LTR	DESCRIPTION	DATE	APPROVED



THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5206	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5393	DATA ACQUISITION AND DISTRIBUTION SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5286	BULK STORAGE — MODULE SPECIFICATION.
70 SD 5287	MODULARITY GUIDELINES.
70 SD 5239	MEASUREMENT REQUIREMENT SPECIFICATION (MRS)
70-225-203	SCHEMATIC
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

PRELIMINARY



SECTION A-A
TYPICAL PAGE MOUNTING

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

QTY	PART NUMBER	DESCRIPTION	REMARKS
3		CONNECTORS	
1		INTERFACE LOGIC PAGE	
1		CONTROL PAGE	
1		POWER SUPPLY PAGE	
1		HOUSING	

SPECIFICATION NUMBER AND TYPE	NOTE	ITEM NO.
	APPLIES TO	
APPLICABLE IBM SPECIFICATIONS		

☐ ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY VENDOR NAME(S), ADDRESS(ES), AND PART NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN ( ). A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM

☐ COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH (SEE SOURCE OF SUPPLY)

CHECK BLOCK ☒ IF APPLICABLE

IDENT. OF SYM: V-VENDOR ITEM
SEE SPEC OR SOURCE CONT DWG
R-REF QTY

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON 2 PLACE DEC ± 3 PLACE DEC ± ANGLES

MATL

HARD CASE DEPTH

SURF TREAT

CONTR NO.

PREPARATION E D Conrad 10-21-70

DSGN CHK [illegible] 11-2-70

DRAWING CHECK 11-2-70

DESIGN APPROVAL W R Bauer 11-2-70

INTERNATIONAL BUSINESS MACHINES CORP.
FEDERAL SYSTEMS DIVISION
ARMONK, NEW YORK 10504

TITLE CONTROL UNIT ASSY

SIZE	CODE IDENT NO.	DRAWING NO.
F	20234	70-225-602

SCALE WT SHEET

SOURCE OF SUPPLY

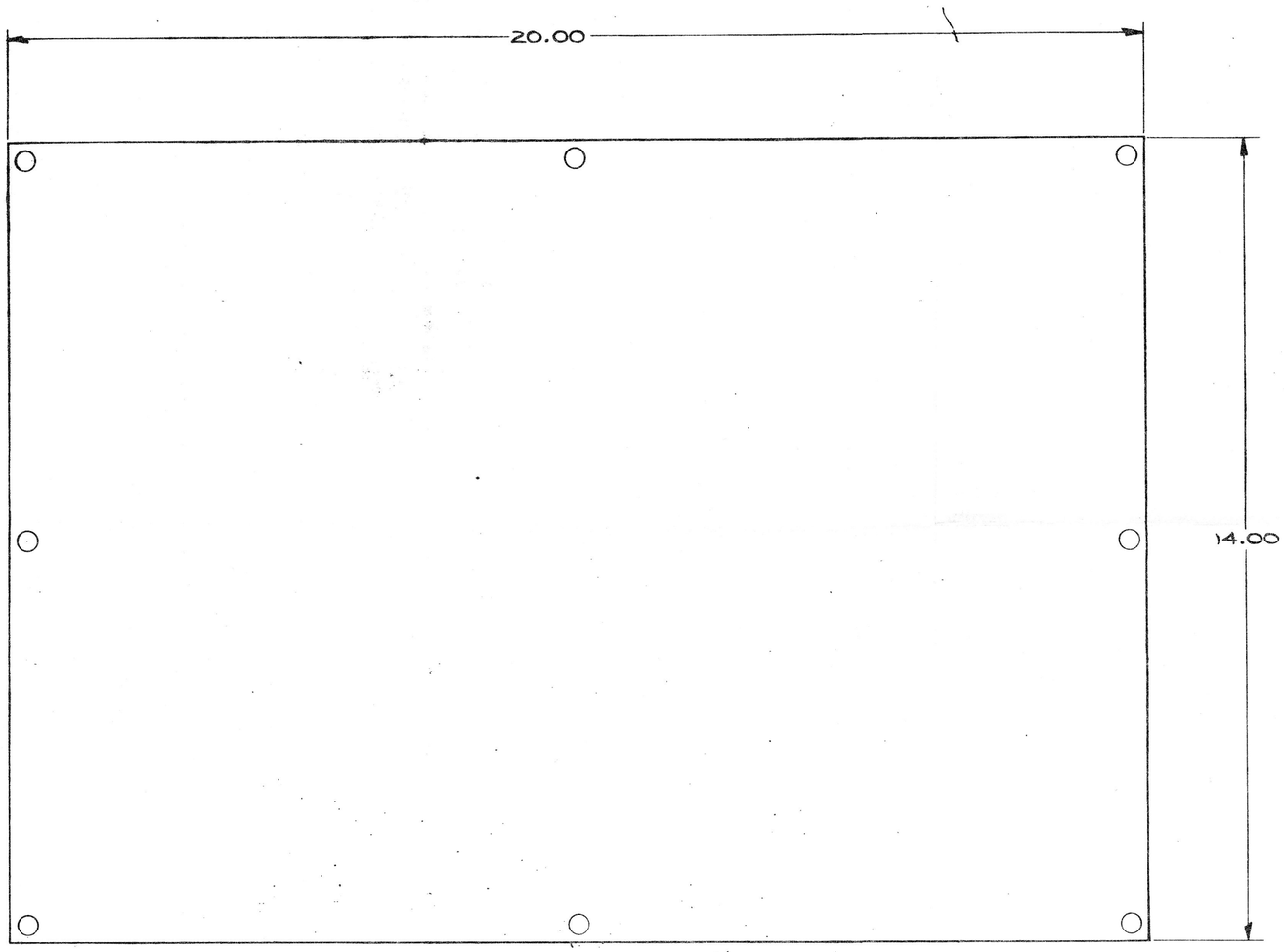
VENDOR	VENDOR ADDRESS	VENDOR CODE	VENDOR CAT. OR PN

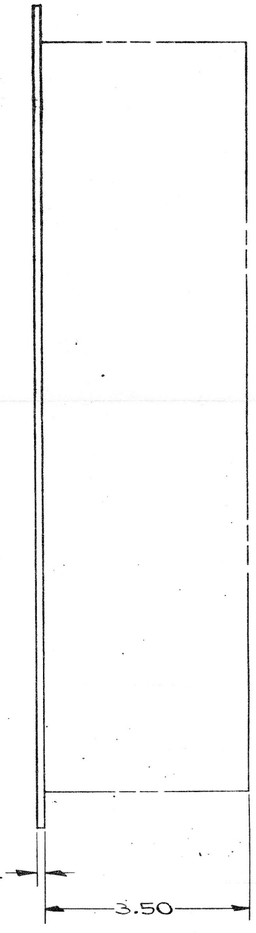
DRAWING NO.

SHEET REV

REVISIONS

CHK	ENGRG NOTICE	LTR	DESCRIPTION	DATE	APPROVED





PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5256	COMPUTER SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5394	COMPUTER SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

SPECIFICATION NUMBER AND TYPE	NOTE	ITEM NO. APPLIES TO

APPLICABLE IBM SPECIFICATIONS

☐ ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY VENDOR NAME(S), ADDRESS(ES), AND PART NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN ( ). A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM

☐ COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH (SEE SOURCE OF SUPPLY)

CHECK BLOCK ☒ IF APPLICABLE

IDENT. OF SYM: V-VENDOR ITEM SEE SPEC OR SOURCE CONT DWG R-REF QTY

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON 2 PLACE DEC ±.25 3 PLACE DEC ANGLES

MATL

HARD CASE DEPTH

SURF TREAT

CONTR NO.

PREPARATION E. BROWN 10/22/70

DSGN CHK

DRAWING CHECK

DESIGN APPROVAL

INTERNATIONAL BUSINESS MACHINES CORP.
FEDERAL SYSTEMS DIVISION
ARMONK, NEW YORK

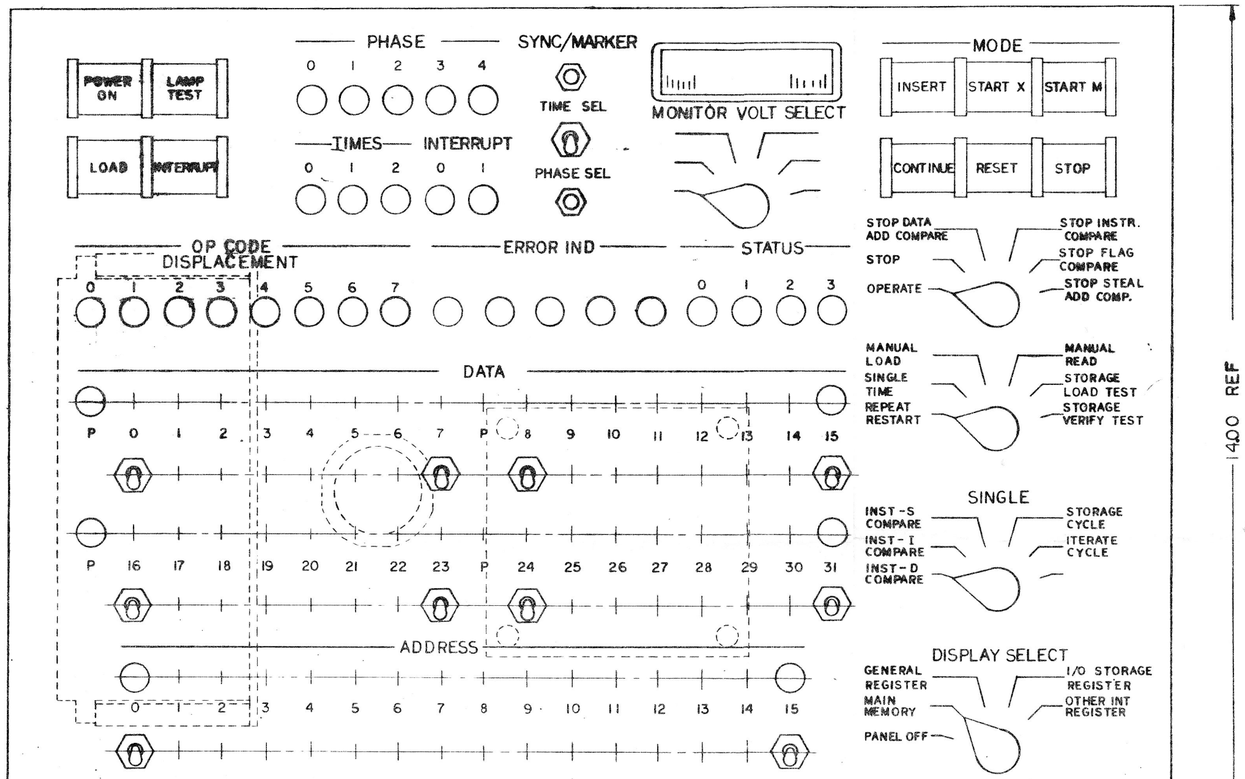
TITLE PANEL, COMPUTER CONT. INTER. UNIT

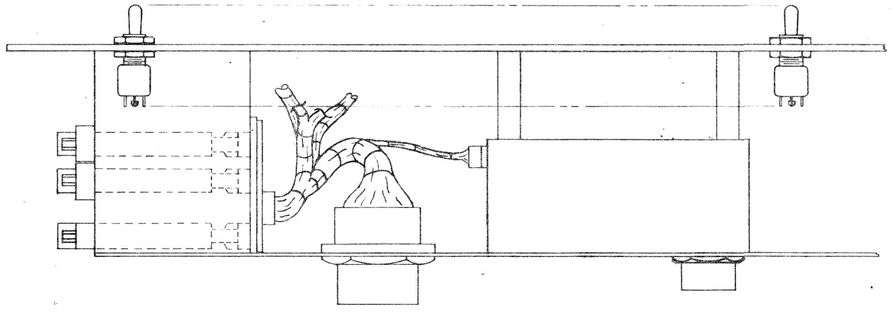
SIZE F | CODE IDENT NO. 20234 | DRAWING NO. 70-225-700

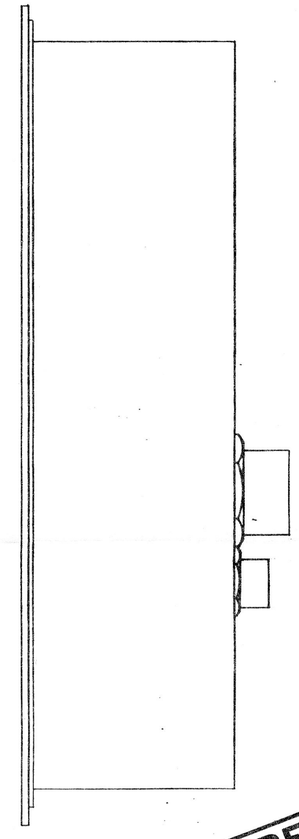
SCALE 1/1 | WT | SHEET

SOURCE OF SUPPLY				DRAWING NO.
VENDOR	VENDOR ADDRESS	VENDOR CODE	VENDOR CAT. OR P.N.	SHEET / REV

REVISIONS					
CHK	ENGRG NOTICE	LTR	DESCRIPTION	DATE	APPROVED







PRELIMINARY

REDUCED SIZE PRINT

SCALE: 0 1 2 INCHES

THE FOLLOWING DOCUMENTS SUPPLY ADDITIONAL INFORMATION TO AID IN UNDERSTANDING THE PURPOSE, DERIVATION AND OPERATION OF THIS DESIGN:

70 SD 5256	COMPUTER SUBSYSTEM PRELIMINARY CONTRACT END ITEM SPECIFICATION.
70 SD 5394	COMPUTER SUBSYSTEM DESIGN CONCEPT SELECTION.
70 SD 5243	SAFETY DESIGN REQUIREMENTS.
70 SD 5395	HUMAN ENGINEERING REQUIREMENTS.

QTY	PART NO.	DESCRIPTION	REMARKS
1		POWER SUPPLY	
76		INDICATOR LAMP	
3		PAGE ASSY	
2		CONNECTOR	
10		PUSH BUTTON SWITCH	
5		ROTARY SWITCH	
48		TOGGLE SWITCH	

SPECIFICATION NUMBER AND TYPE	NOTE APPLIES TO	ITEM NO.

APPLICABLE IBM SPECIFICATIONS

☐ ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY VENDOR NAME(S), ADDRESS(ES), AND PART NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN ( ). A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM

☐ COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH (SEE SOURCE OF SUPPLY)

CHECK BLOCK ☒ IF APPLICABLE

IDENT. OF SYM: V-VENDOR ITEM SEE SPEC OR SOURCE CONT DWG R-REF QTY

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON 2 PLACE DEC 3 PLACE DEC ANGLES

MATL

HARD CASE DEPTH

SURF TREAT

CONTR NO.

PREPARATION S.W. Bowie 10/27/70

DSGN CHK R.E. Davis 10/27/70

DRAWING CHECK

DESIGN APPROVAL W.R. Bowie 11/1/70

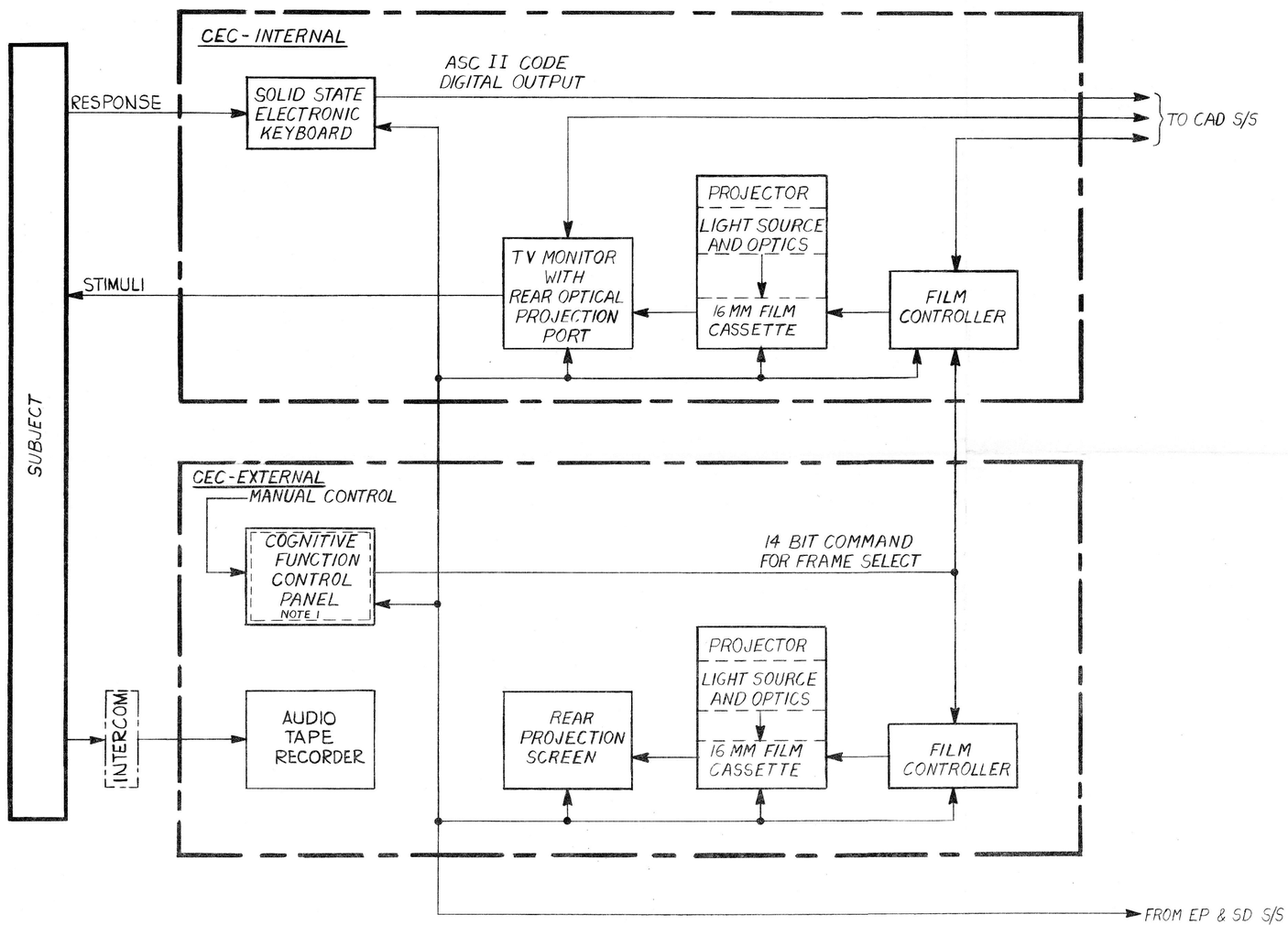
INTERNATIONAL BUSINESS MACHINES CORP.
FEDERAL SYSTEMS DIVISION
ARMONK, NEW YORK 10504

TITLE: PANEL ASSY - COMPUTER CONTROL & INTERFACE

SIZE	CODE IDENT NO.	DRAWING NO.
F	20234	70-225-702

SCALE 1/1 WT SHEET

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



NOTES:

1. PART OF STANDARD MEASUREMENT DISPLAY MODULE

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL—	ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN J KRAIGER	9	10	70
CHECKED	9	10	70
RELEASED KBC SCHE	12	11	70
ENGR	6	11	70
	6	11	70
	6	11	70
	5	11	70
	6	11	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA PA

DIAGRAM-SIGNAL FLOW
COGNITIVE FUNCTION MODULE
BE S/S
IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D220774

SCALE — SHEET 1 OF 1

47D220774	47D222820G1
DWG NO	NEXT ASSY

DIST TO

PN-004-F [1-69] PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

SAMPLE ID READER

URINE SAMPLE

CONSTANT PRESSURE PUMP

SAMPLE ID READER

BLOOD SAMPLE

CONSTANT PRESSURE PUMP

GAS/LIQUID PHASE SEPARATOR

PRECISION DISPENSER

LINEAR ACTUATOR

GAS/LIQUID PHASE SEPARATOR

PRECISION DISPENSER

LINEAR ACTUATOR

RADIATION DETECTOR (REF)

DATA 8 LINES DIGITAL

DATA 8 LINES DIGITAL

DATA 12 LINES DIGITAL

TO RDCU

CONTAINER ID READER

TO MODULE INPUT CONTAINER

TO MODULE INPUT CONTAINER

TO MODULE INPUT CONTAINER

TRANSPORT CHANNEL

DILUENT STORE CONTAINER

PRECISION PUMP

LINEAR ACTUATOR

TYPICAL DILUENT PUMP SYSTEM (6 REQUIRED)

TRANSPORT DRIVE

MIXER

MANUAL CONTROLS

THUMBWHEEL SWITCHES

SWITCH SETTING (DIGITAL)

"SET" INPUT

"CLOCK"

COUNTDOWN CIRCUITS

ZERO SENSOR OUTPUT

PUMP COMMAND

SET

PULSE GENERATOR

ENABLE

FLIP-FLOP

RESET

START

TYPICAL MANUAL PUMP CONTROL (8 REQUIRED)

LOCAL/REMOTE SWITCH

CONTROL 17 EVENT

8 DIGITAL

+24V

TO DIGITAL CIRCUITS AND ID READERS

+5V SUPPLY

POWER SWITCH AND CONDITIONER

+28VDC

SAMPLE PREPARATION ASSEMBLY

PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES—
TOLERANCES ON:
2-PLACE DECIMALS ±
3-PLACE DECIMALS ±
ANGLES ±
FRACTIONS ±
MATERIAL—
ALL SURF. ✓

SIGNATURES		DAY	MO	YR
DRAWN	J. Hill	26	10	70
CHECKED	M. Hill	29	10	70
RELEASED	RELEASED DCR	30	11	70
ENGR		27	10	70
PROJ		27	10	70
MFG	J.A. Graham	30	10	70
		30	10	70
	R.J. Graham	30	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

DIAGRAM, SIGNAL FLOW
SAMPLE ACQUISITION & PREPARATION MODULE
LA S/S IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D222837

SCALE NONE SHEET 1 OF 2

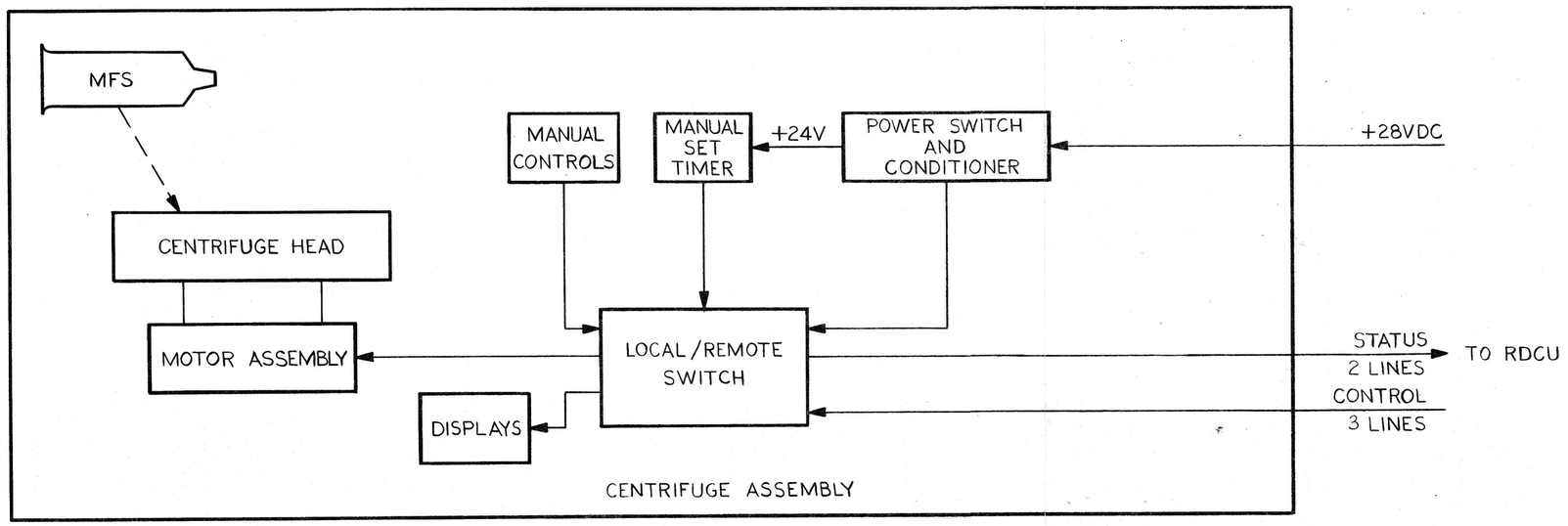
DIST TO

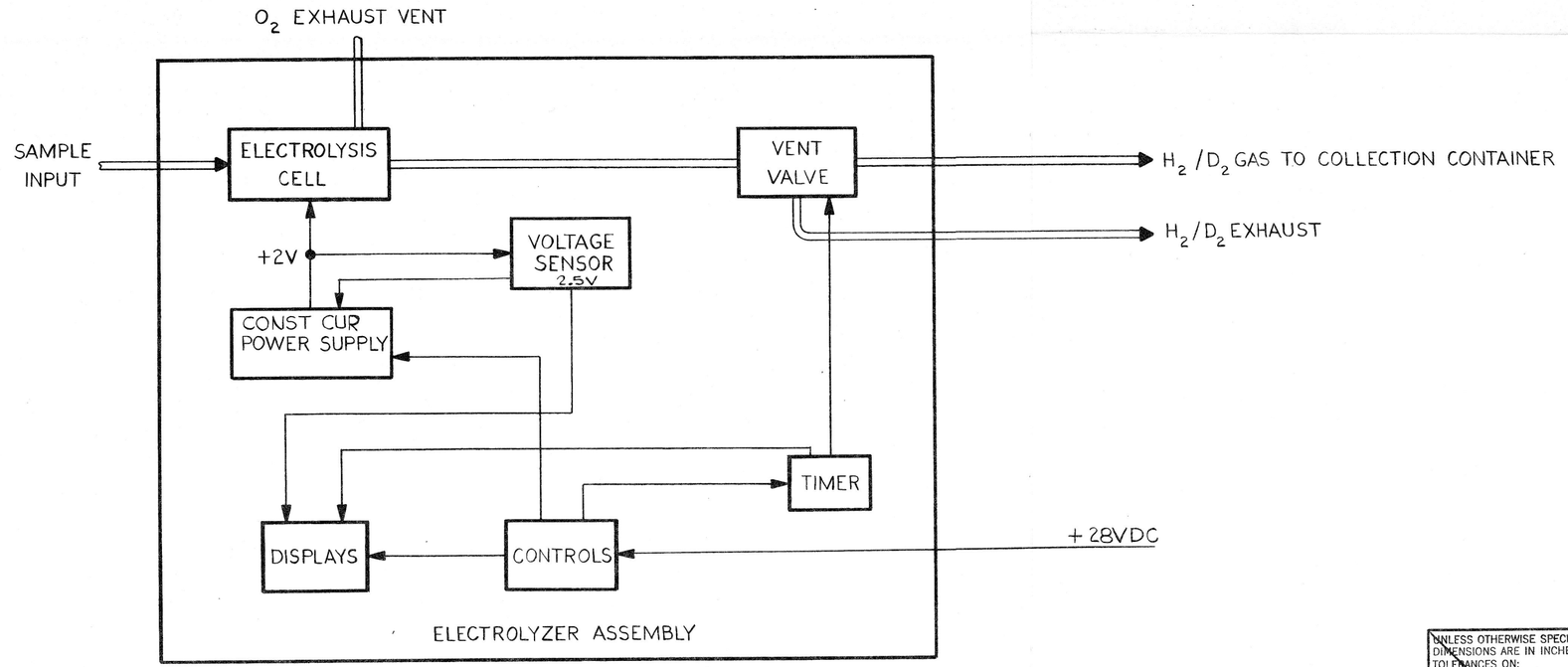
47D222837	47E222812
DRAWING NO	NEXT ASSY

SIZE D ER47D222837 REV

PN-966-F (1-69)
PRINTED IN U.S.A.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





PRELIMINARY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES— TOLERANCES ON: 2-PLACE DECIMALS ± 3-PLACE DECIMALS ± ANGLES ± FRACTIONS ± MATERIAL— ALL SURF. ✓

SIGNATURES	DAY	MO	YR
DRAWN J. Hill	27	10	70
CHECKED [illegible]	28	10	70
RELEASED [illegible]	30	10	70
ENGR [illegible]	29	10	70
[illegible]	29	10	70
[illegible]	30	10	70
[illegible]	30	10	70
[illegible]	30	10	70

GENERAL ELECTRIC
SPACE SYSTEMS LOC PHILA, PA

DIAGRAM, SIGNAL FLOW
SAMPLE ACQUISITION & PREPARATION MODULE
LA S/S IMBLMS B4

SIZE	CODE IDENT NO.	
D	23991	ER47D222837

SCALE NONE SHEET 2 OF 2 DIST TO

ER47D222837 REV D SIZE

FN-684-F (1-69) PRINTED IN U.S.A.